*Xi*III™- Series
Maintenance Manual

*Xi*III™- Series
Maintenance Manual

Zebra

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Notes

SECTION 1 SYSTEM DESCRIPTION

DESCRIPTION

The Zebra *Xi*III™-Series thermal transfer demand printers are versatile label and ticket printers designed to print high quality bar codes, various sizes and styles of alphanumeric characters, and graphics in either the thermal transfer or direct thermal mode. The *Xi*III-Series printers have the flexibility to meet a variety of applications. The Zebra Programming Language II (ZPL II®) allows the programmer to format the printed material. ZPL II is transparent to protocol converters and allows the *Xi*III-Series printers to be easily integrated with most systems and host mainframes.

SCOPE

This manual contains the information necessary for the proper maintenance of the Zebra 90*Xi*III™, 96*Xi*III™, 140*Xi*III™, 170*Xi*III™, and 220*Xi*III™ printers. Information presented applies to all *Xi*III-Series models, unless otherwise indicated.

Section 1 System Description provides an overview of the contents of this maintenance manual. Also contains overall description and specifications of the *Xi*III Series printers.

Section 2 Operation Overview details the printer operator controls, power and data cable hook-up, loading supplies in all modes, setting up software, calibration and configuration.

Section 3 Troubleshooting presents the diagnostic tests that are built into the *Xi*III-Series printers. Examples of the labels that print for most of these diagnostic tests are illustrated and contains troubleshooting tables showing symptom, diagnosis and action columns to assist the repair technician in quickly locating and repairing a printer fault. Example labels illustrate several common misalignment conditions and the best methods of adjustment.

Section 4 Maintenance discusses the recommended cleaning procedures for the printer and the printhead. Recommended cleaning agents and a preventive maintenance schedule are specified. Provides disassembly, replacement and reassemble instructions for the *Xi*III printers. Required tools and test equipment is specified. Adjustment procedures are provided along with the required tensions, torque and tolerances. Instructions on AC power fuse replacement are also contained in this section.

Section 5 Maintenance and Assembly Drawings provides the assembly drawing and parts lists.

Section 6 Miscellaneous Information and Appendices contains reference material that will assist the technician when installing and maintaining the printer.

RELATED MANUALS

A further description of the *Xi*III printer models may be found in the *Xi*III-Series User Guide (PN 48025L). More information on ZPL II programming language can be found in the ZPL II Programming Guide Volume 1: Command Reference (PN 45541L), ZPL II Programming Guide Volume 2: (PN 45542L) and the ZebraNet® Networking: Print Server II™ Operations Guide (PN 45537L).

This section of the manual is intended to supplement the printer's User's Guide by providing additional information to aid the service technician in troubleshooting and maintaining the printer.

PRINTER SPECIFICATIONS

Options

- Cutter
- Rewind
- Bar-One® Windows™-based WYSIWYG on-screen label design and print application software
- Cutter tray
- Cutter-rewind
- Media supply spindle (1.6"/40 mm core)
- Media supply spindle (3"/76 mm core)
- Double-hinged media door with clear panel
- Applicator interface
- Real time clock
- IBM twinax interface
- IBM coax interface
- ZebraNet PrintServer II, including Ethernet interface (10Base-T), WebView graphical setup and printer control, and Alert unsolicited error notification
- RS-485 interface
- Downloadable Fonts
- Font cards
- DRAM memory expandable to 12 MB
- Memory cards
- Printer drivers for Windows operating systems
- Advanced counter

ZEBRA PROGRAMMING LANGUAGE II (ZPL II)

- Downloadable graphics, scalable and bitmap fonts, and label formats
- Object copying between memory areas (RAM, memory card, and internal FLASH)
- Code Page 850 character set
- Adjustable print cache
- Data compression
- Automatic virtual input buffer management
- Automatic memory allocation
- Format inversion
- Mirror image printing
- Four-position field rotation (0º, 90º, 180º, and 270º)
- Controlled via mainframe, mini- computer, PC, portable data terminal
- Programmable quantity with print, pause, and cut control
- Communicates in printable ASCII characters
- Error-checking protocol
- Slew command
- Serialized fields
- In-spec OCR-A and OCR-B
- UPC/EAN
- User-programmable password
- Status message to host upon request

BAR CODES

- Bar code ratios - 2:1, 7:3, 5:2, & 3:1
- Codabar (supports ratios of 2:1 up to 3:1)
- CODABLOCK
- Code 11
- Code 39 (supports ratios of 2:1 up to 3:1)
- Code 49 (2-dimensional bar code)
- Code 93
- Code 128 (with subsets A, B, and C and UCC case C codes)
- Data Matrix
- EAN-8, EAN-13, EAN extensions
- Industrial 2 of 5
- Interleaved 2 of 5 (supports ratios of 2:1 up to 3:1, Modulus 10 Check Digit)
- ISBT-128
- LOGMARS
- MaxiCode
- Micro PDF
- MSI
- PDF-417 (2-dimensional bar code)
- Plessey
- POSTNET
- QR-Code
- Standard 2 of 5
- UPC-A, UPC-E, UPC extensions
- Check digit calculation where applicable

STANDARD PRINTER FONTS

Fonts A, B, C,D,E,F,G,H, and GS are expandable up to 10 times, height and width independently. However, fonts E and H (OCR-A and OCR-B) are not considered “in-spec" when expanded. The scalable smooth font 0 (CG Triumvirate™ Bold Condensed) is expandable on a dot-by-dot basis, height and width independent, while maintaining smooth edges. Maximum character size depends on available memory.

IBM Code Page 850 international character sets are available in the fonts A, B, C, D, E, F, G, and 0 through software control.

Font	Matrix			Type*	Character Size					
					Inches			Millimeters		
	Height	Width	Inter-character Gap		Height	Width	Char/inch	Height	Width	Char/inch
A	9	5	1	U-L-D	0.044	0.029	33.90	1.13	0.75	1.33
B	11	7	2	U	0.054	0.044	22.60	1.38	1.13	0.89
C,D	18	10	2	U-L-D	0.088	0.059	16.95	2.25	1.50	0.67
E	28	15	5	OCR-B	0.138	0.098	10.17	3.50	2.50	0.40
F	26	13	3	U-L-D	0.128	0.079	12.71	3.25	2.00	0.50
G	60	40	8	U-L-D	0.295	0.236	4.24	7.50	6.00	0.17
H	21	13	6	OCR-A	0.103	0.093	10.71	2.63	2.38	0.42
GS	24	24	0	SYMBOL	0.118	0.118	8.48	3.00	3.00	0.33
P	20	18	N/A	U-L-D	.098	.089	N/A	2.49	2.26	N/A
Q	28	24	N/A	U-L-D	.138	.118	N/A	3.51	2.99	N/A
R	35	31	N/A	U-L-D	.172	.153	N/A	4.37	3.89	N/A
S	40	35	N/A	U-L-D	.197	.172	N/A	5.00	4.37	N/A
T	48	42	N/A	U-L-D	.236	.207	N/A	5.99	5.26	N/A
U	59	53	N/A	U-L-D	.290	.261	N/A	7.37	6.63	N/A
V	80	71	N/A	U-L-D	.394	.349	N/A	10.0	8.86	N/A
0	Default: 15 x 12			U-L-D	Scalable					
*U = Uppercase, L = Lowercase, D = Descenders										

Table 1-1 Font Matrices for 8 dot/mm (203 DPI) *Xi*III Printheads

Font	Matrix			Type*	Character Size					
					Inches			Millimeters		
	Height	Width	Inter-character Gap		Height	Width	Char/inch	Height	Width	Char/inch
A	9	5	1	U-L-D	.030	0.020	50.00	0.76	0.51	1.97
B	11	7	2	U	.037	0.030	33.33	0.93	0.76	1.31
C,D	18	10	2	U-L-D	.060	0.040	25.00	1.53	1.02	0.98
E	41	20	6	OCR-B	.137	0.087	11.54	3.47	2.20	0.45
F	26	13	3	U-L-D	.087	0.053	18.75	2.20	1.36	0.74
G	60	40	8	U-L-D	.200	0.160	6.25	5.08	4.07	0.25
H	30	19	9	OCR-A	.100	0.093	10.71	2.54	2.37	0.42
GS	24	24	0	SYMBOL	.080	0.080	12.50	2.03	2.03	0.49
P	20	18	N/A	U-L-D	.098	.089	N/A	2.49	2.26	N/A
Q	28	24	N/A	U-L-D	.138	.118	N/A	3.51	2.99	N/A
R	35	31	N/A	U-L-D	.172	.153	N/A	4.37	3.89	N/A
S	40	35	N/A	U-L-D	.197	.172	N/A	5.00	4.37	N/A
T	48	42	N/A	U-L-D	.236	.207	N/A	5.99	5.26	N/A
U	59	53	N/A	U-L-D	.290	.261	N/A	7.37	6.63	N/A
V	80	71	N/A	U-L-D	.394	.349	N/A	10.0	8.86	N/A
0	Default: 15 x 12			U-L-D	Scalable					
*U = Uppercase, L = Lowercase, D = Descenders										

Table 1-2 Font Matrices for 12 dot/mm (300 DPI) *Xi*III Printheads

Font	Matrix			Type*	Character Size					
					Inches			Millimeters		
	Height	Width	Inter-character Gap		Height	Width	Char/inch	Height	Width	Char/mm
A	9	5	1	U-L-D	.015	0.010	100.00	0.38	0.25	4.00
B	11	7	2	U	.018	0.015	66.66	0.46	0.38	2.60
C,D	18	10	2	U-L-D	.030	0.020	50.00	0.77	0.51	2.00
E	82	40	6	OCR-B	.137	0.087	11.54	3.47	2.20	0.45
F	26	13	3	U-L-D	.043	0.027	37.50	1.10	0.68	1.50
G	60	40	8	U-L-D	.100	0.080	12.50	2.54	2.04	0.50
H	60	38	9	OCR-A	.100	0.093	10.71	2.54	2.37	0.42
GS	24	24	0	SYMBOL	.040	.040	25.00	1.02	1.02	1.00
P	20	18	N/A	U-L-D	.098	.089	N/A	2.49	2.26	N/A
Q	28	24	N/A	U-L-D	.138	.118	N/A	3.51	2.99	N/A
R	35	31	N/A	U-L-D	.172	.153	N/A	4.37	3.89	N/A
S	40	35	N/A	U-L-D	.197	.172	N/A	5.00	4.37	N/A
T	48	42	N/A	U-L-D	.236	.207	N/A	5.99	5.26	N/A
U	59	53	N/A	U-L-D	.290	.261	N/A	7.37	6.63	N/A
V	80	71	N/A	U-L-D	.394	.349	N/A	10.0	8.86	N/A
0	Default: 15 x 12			U-L-D	Scalable (smooth) font					
*U = Uppercase, L = Lowercase, D = Descenders										

Table 1-3 Font Matrices for 24 dot/mm (600 DPI) 96 *Xi*III Printheads

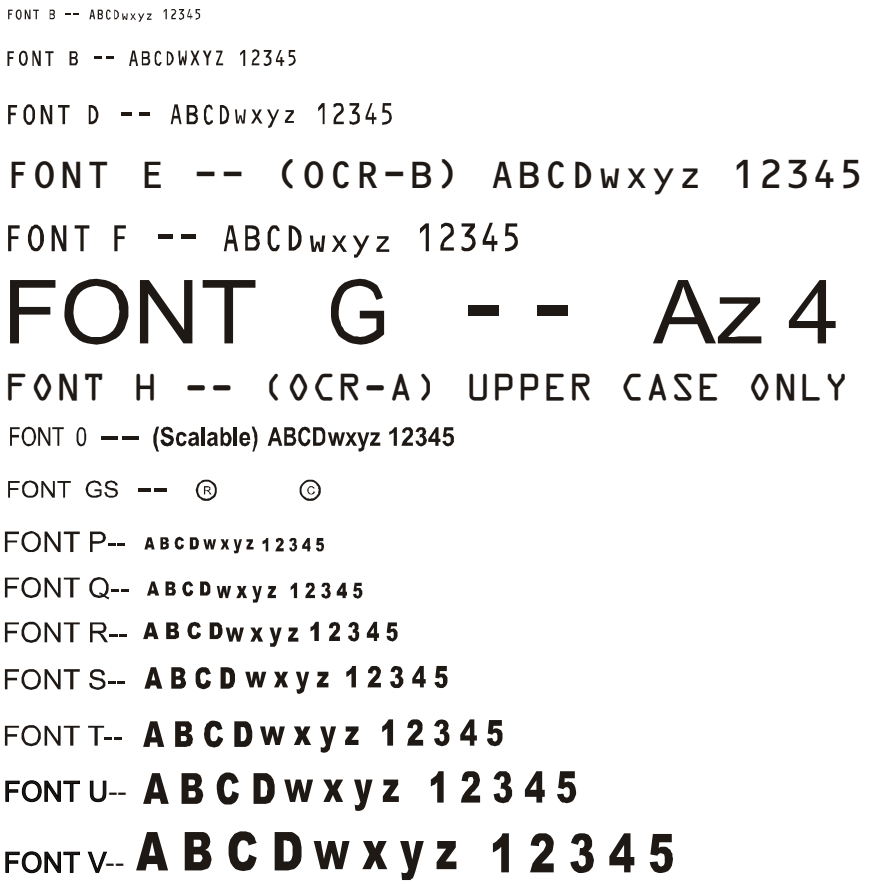

FONT B -- ABCDwxyz 12345
FONT B -- ABCDWXYZ 12345
FONT D -- ABCDwxyz 12345
FONT E -- (OCR-B) ABCDwxyz 12345
FONT F -- ABCDwxyz 12345
FONT G -- Az 4
FONT H -- (OCR-A) UPPER CASE ONLY
FONT 0 -- (Scalable) ABCDwxyz 12345
FONT GS -- ® ©
FONT P-- ABCDwxyz 12345
FONT Q-- ABCDwxyz 12345
FONT R-- ABCDwxyz 12345
FONT S-- ABCDwxyz 12345
FONT T-- ABCDwxyz 12345
FONT U-- ABCDwxyz 12345
FONT V-- ABCDwxyz 12345

Figure 1-1 Default Fonts Examples

MEDIA CONSIDERATIONS

Media Specifications			90/96*Xi*III	140*Xi*III	170*Xi*III	220*Xi*III
Minimum label length		Tear-off	0.7" (18 mm)	0.7" (18 mm)	0.7" (18 mm)	0.7" (18 mm)
		Peel-off	0.5" (13 mm)	0.5" (13 mm)	0.5" (13 mm)	0.5" (13 mm)
		Cutter	1.5" (38 mm)	1.5" (38 mm)	1.5" (38 mm)	1.5" (38 mm)
		Rewind	0.25" (6 mm)	0.25" (6 mm)	0.25" (6 mm)	0.25" (6 mm)
Total media width (Includes + liner, if any)		Minimum	0.79" (20 mm)	1.57" (40 mm)	2.00" (51 mm)	4.25" (108 mm)
		Maximum	3.54" (90 mm)	5.51" (140 mm)	7.1" (180 mm)	8.80" (224 mm)
Total thickness (includes liner, if any)		Minimum	0.003" (0.076 mm)	0.003" (0.076 mm)	0.003" (0.076 mm)	0.003" (0.076 mm)
		Maximum	0.012" (0.305 mm)	0.012" (0.305 mm)	0.012" (0.305 mm)	0.012" (0.305 mm)
Cutter maximum full-width media thickness			.014" (.35 mm)	009" (.23 mm)	.007" (.18 mm)	.005" (.14 mm)
Roll media core inside diameter			3" (76 mm)	3" (76 mm)	3" (76 mm)	3" (76 mm)
Maximum roll diameter			8.0" (203 mm)	8.0" (203 mm)	8.0" (203 mm)	8.0" (203 mm)
Inter-label gap			Minimum	0.079" (2 mm)	0.079" (2 mm)	0.079" (2 mm)
			Preferred	0.118" (3 mm)	0.118" (3 mm)	0.118" (3 mm)
			Maximum	Maximum inter-label gap = 2 x (label length for which you have calibrated the printer) + 1"		
Maximum internal fanfold media pack size (label + liner) L x W x H			8.0" x 3.54" x 4.5" (203x90x114 mm	8.0" x 5.51" x 4.5" (203x140x114 mm)	8.0" x 7.1" x 4.5" (203x180x114 mm)	8.0" x 8.8" x 4.5" (203x224x114 mm)
Ticket/tag sensing notch L x W			0.12" x .25" (3 mm) x (6 mm)	0.12" x .25" (3 mm) x (6 mm)	0.12" x .25" (3 mm) x (6 mm)	0.12" x .25" (3 mm) x (6 mm)
Ticket/tag sensing hole diameter			0.125" (3 mm)	0.125" (3 mm)	0.125" (3 mm)	0.125" (3 mm)
Effective leading edge registration accuracy*		Vertical	0.060" (±1.5 mm)	±0.070" (±1.8 mm)	0.060" (±1.5 mm)	±0.050" (±1.3 mm)
		Horizontal	0.060" (±1.5 mm)	±0.070" (±1.8 mm)	0.060" (±1.5 mm)	0.060" (±1.5 mm)
Additional specs. for black mark sensing	Mark length (measuring parallel to label/tag edge)	Minimum	0.12" (3 mm)	0.12" (3 mm)	0.12" (3 mm)	0.12" (3 mm)
		Maximum	0.43" (11 mm)	0.43" (11 mm)	0.43" (11 mm)	0.43" (11 mm)
	Mark width (measuring perpendicular to label/tag edge	Minimum	0.43" (11 mm)	0.43" (11 mm)	0.43" (11 mm)	0.43" (11 mm)
		Maximum	Full media width	Full media width	Full media width	Full media width
	Mark location		Marks must be located within .040" (1 mm) of the inside media edge.			
	Mark density		> 1.0 ODU (Optical Density Unit)	> 1.0 ODU (Optical Density Unit)	> 1.0 ODU (Optical Density Unit)	> 1.0 ODU (Optical Density Unit)
	Maximum density of the back of the media on which the black mark is printed		0.5 ODU	0.5 ODU	0.5 ODU	0.5 ODU

* Media registration and minimum label length are affected by media type and width, ribbon type, print speed, and printer mode of operation. Performance improves as these factors are optimized. Zebra recommends always qualifying any application with thorough testing.

Table 1-4 Media Considerations

RIBBON CONSIDERATIONS

Ribbon Specifications			90/96*Xi*III		140*Xi*III		170*Xi*III		220*Xi*III	
Ribbon width (*To protect the print head from wear, Zebra recommends using ribbon at least as wide as the media you are using*.)		Maximum	3.4"	87 mm	5.10“	130 mm	7"	170 mm	8.60"	220 mm
		Minimum	0.79"	20mm	1.57"	40 mm	2.0"	51 mm	4.33"	110 mm
Standard lengths	2:1 media to ribbon roll ratio		984'	300 m	984'	300 m	984'	300 m	984'	300 m
	3:1 media to ribbon roll ratio		1476'	450 m	1476'	450 m	1476'	450 m	1476'	450 m
Roll size	Inner diameter of core		1.0"	25.4 mm	1.0"	25.4 mm	1.0"	25.4 mm	1.0"	25.4 mm
	Outside diameter of full ribbon roll		3.2"	81.3 mm	3.2"	81.3 mm	3.2"	81.3 mm	3.2"	81.3 mm

PRINTER CONSIDERATIONS

Printing Specifications			90*Xi*III	96*Xi*III	140*Xi*III	170*Xi*III	220*Xi*III
Resolution			300 dots per inch 12 dots/mm	600 dots/inch 23.5 dots/mm	203 dots per inch 8 dots/mm	300 dots per inch 12 dots/mm	203 dots per inch 8 dots/mm
Dot size (square)			0.0033" x 0.0039 0.085 x 0.100 mm	0.0016”x0.0016” .042 x.042 mm	0.0049" x 0.0049 0.125 x 0.125 mm	0.0033" x 0.0039" 0.085 x 0.100 mm	0.0049" x 0.0049" 0.125 x 0.125 mm
First dot location			0.12" ± .035" (3 mm ±.89mm)	0.12" ± .035" (3 mm ±.89mm)	0.10" ± .035" (2.5 mm ±.89mm)	0.10" ± .035" (2.5 mm ±.89mm)	0.10" ± .035" (2.5 mm ±.89mm)
Max print width			3.4" (86 mm)	3.2” (81 mm)	5.04 (128 mm)	6.6" (168 mm)	8.5" (216 mm)
Print length (max)	Non-continuous printing	Standard memory	39" (991 mm)	20" (508 mm)	39" (991 mm)	39" (991 mm)	39" (991 mm)
		12 Mbyte memory	39" (991 mm)	39" (991 mm)	39" (991 mm)	39" (991 mm)	39" (991 mm)
	Continuous printing	Standard memory	80” (2032 mm)	20" (508 mm)	121” (3073 mm)	41” (1041 mm)	71” (1803 mm)
		12 Mbyte additional memory	100” (2540 mm)	52” (1321 mm)	150” (3810 mm)	100” (2540 mm)	150” (3810 mm)
Bar code modulus (“X”) dimension		Ladder (rotated) orientation	3.9 mil to 39 mil	1.6 mil to 16 mil	4.9 mil to 49 mil	3.9 mil to 39 mil	4.9 mil to 49 mil
		Picket fence (non-rotated)	3.33 mil to 33mil	1.6 mil to 16 mil	4.9 mil to 49 mil	3.33 mil to 33mil	4.9 mil to 49 mil
Thin film printhead with Element Energy Equalizer (E3)			Yes	Yes	Yes	Yes	Yes

GENERAL SPECIFICATIONS

Physical Characteristics	90/96*Xi*III		140*Xi*III		170*Xi*III		220*Xi*III	
Height	15.5"	393.7 mm	15.5"	393.7 mm	15.5"	393.7 mm	15.5"	393.7 mm
Width	9.15"	232.4 mm	11.15"	283.2 mm	13.15"	334.4 mm	15.65"	397.5 mm
Depth	19.5"	495.3 mm	19.5"	495.3 mm	19.5"	495.3 mm	19.5"	495.3 mm
Weight (without options)	50 lb	22.7 kg	55 lb	25 kg	67 lb	30.5 kg	72 lb	32.7 kg

ELECTRICAL REQUIREMENTS

- Autoselect 90-264 VAC; 48-62 Hz
- 5 Amps for entire AC voltage range
- 25 Watts standby power consumption
- 200/300/350/450 Watts maximum power consumption for 90 *Xi*III, 96*Xi*III, 140*Xi*III, 170*Xi*III, 220*Xi*III respectively. (printing 100% black at 6 ips)
- UL 1950 Listed - Certified to CAN/CSA-C22.2 No. 950-M89 and IEC 950
- Complies with CISPR22B and with FCC and Canadian DOC class “A” rules
- Carries the CE mark of compliance

ENVIRONMENTAL OPERATING RANGES

Temperature	Operating Thermal Transfer: +41°F to +104°F (+5°C to +40°C) Direct Thermal: +32°F to +104°F (0°C to +40°C)	
	Storage	-40°F to +140°F (-40°C to +60°C)
Non-condensing relative humidity	Operating	20% to 85%
	Storage	5% to 85%

COMMUNICATION SPECIFICATIONS

Serial Data Communication Interface Overview

The Zebra *Xi*III has a single data terminal equipment (DTE) port that supports RS-232, RS-422 and RS-485 serial data communications. Baud rate, parity, data length, stop bits, and XON/XOFF or DTR control protocols are front panel selectable. Refer to Figure 1-2. A 25-pin DB25S connector at the rear of the printer provides the data and control leads necessary to communicate through all three signaling methods. The method used is specific to the application of the printer.

For all RS-232 data and control input and output signals, the Zebra *Xi*III follows both the Electronic Industries Association's (EIA) RS-232 and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 specifications.

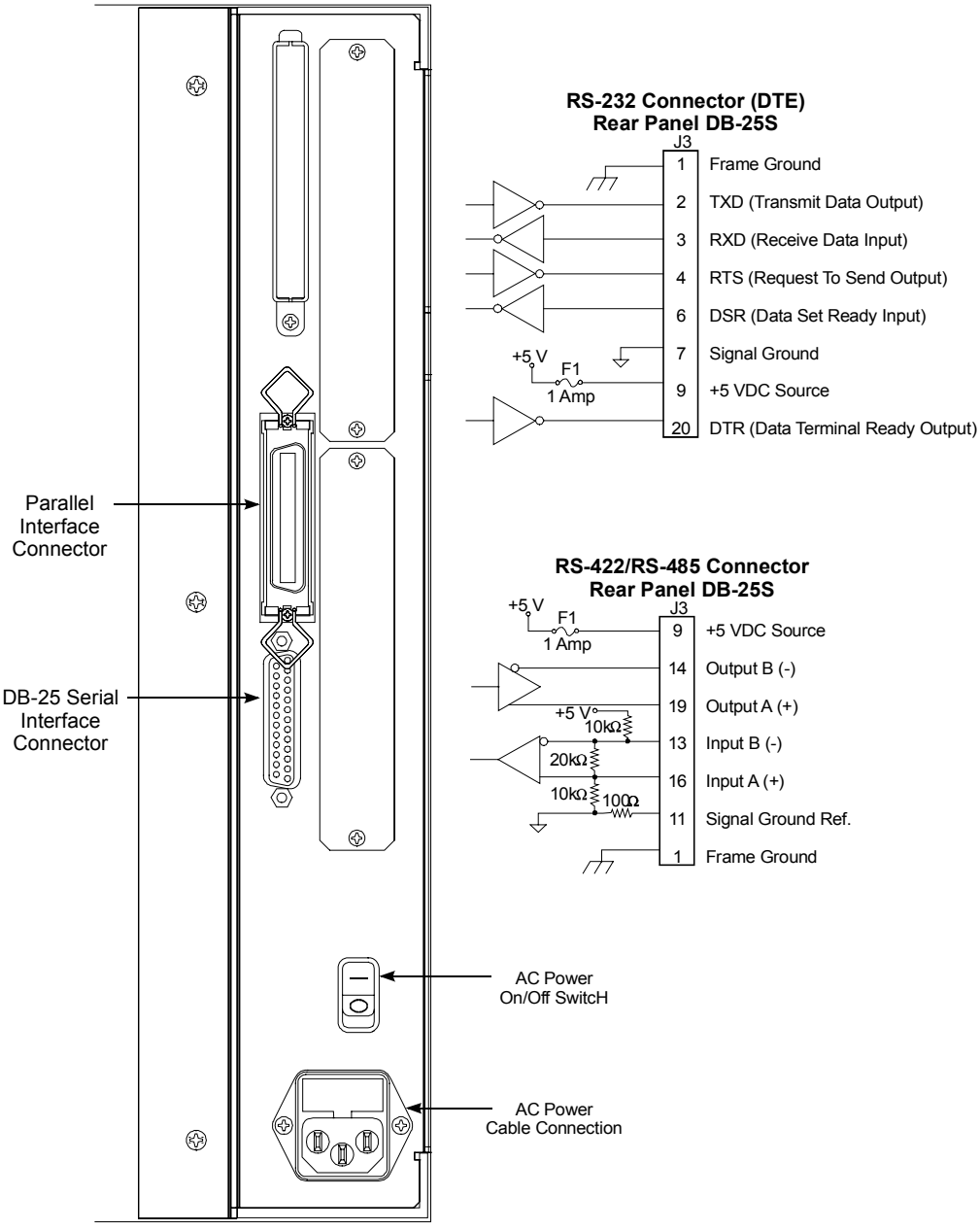


Figure 1-2 Interface Connections

Communication Buffer

The *Xi*III-Series printer has a communication buffer that stores the incoming data until that information can be acted upon (imaged). Communication handshaking (DTR/DSR control signals or XON/XOFF control codes) is used to control when the host can send data to the printer.

The size of the buffer is 5000 characters. As data is received by the *Xi*III-Series printer, the processor monitors the number of characters in the buffer. If the buffer is filled beyond 4744 characters, the *Xi*III will turn the DTR control lead to the OFF condition (negative voltage) or transmit an XOFF (DC-3) control character to the host. When the buffer empties below 4250 characters, the *Xi*III will turn DTR to the ON condition (positive voltage) or transmit an XON (DC-1) control character to the host.

Standard Serial Communication Connector

The DTE port is a DB25S connector located at the rear of the *Xi*III-Series printer. It provides connection to a host via RS-232, RS-422 or RS-485 signaling. Refer to Figure 1-2 for wiring diagrams.

The pin outs and signal descriptions for the DTE port are as follows:

Pin 1—FG (Frame ground) for cable shield.

Pin 2—TXD (RS-232 Transmit Data): Output from printer

Pin 3—RXD (RS-232 Receive Data): Input to printer

Pin 4—RTS (RS-232 Request to Send): Output from printer

Pin 6—DSR (RS-232 Data Set Ready): Input to printer

Pin 7—SG (Signal ground) for RS-232

Pin 9—+5VDC source (1 Amp maximum)

Pin 11—SGR (Signal ground reference) RS-422/RS-485

Pin 13—Data input B(-) RS-422/RS-485

Pin 14—Data output B(-) RS-422/RS-485

Pin 16—Data input A(+) RS-422/RS-485

Pin 19—Data output A(+) RS-422/RS-485

Pin 20—DTR (RS-232 Data Terminal Ready):

NOTE: Pins 5, 8, 10, 12, 15, 17-18 and 21-25 are not used and are not terminated.

Serial Communication Signal Levels

Refer to Figure 1-3. RS-232 data signals are defined as either Mark or Space, while control signals are ON (Active-Positive Voltage) or OFF (Inactive-Negative Voltage). Although the permitted voltage levels can range from ±3VDC to ±25VDC, the levels for the *Xi*III-Series printer are as follows:

RS-232 Transmit and Receive Data

Mark or OFF = -7 to -10 VDC
Space or ON = +7 to +10 VDC

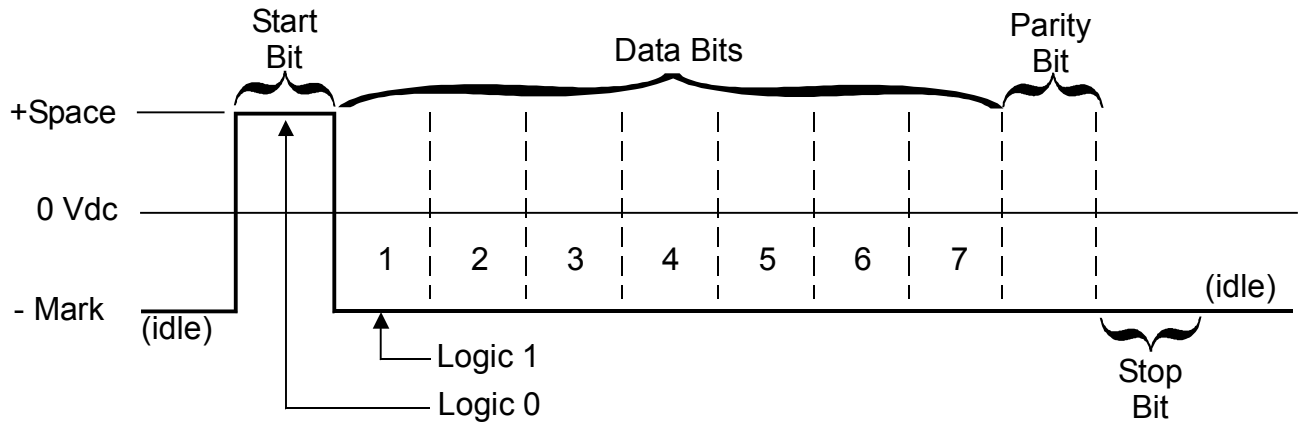


Figure 1-3 RS-232 Signaling

Refer to Figure 1-4. RS-422 and RS-485 data signals are also either Mark or Space. The voltage levels are +5 VDC and 0 VDC when monitored from a specified reference point. The levels for the *Xi*III-Series printer, when referenced to signal ground are:

RS-422 and RS-485 Transmit and Receive Data

Mark Output/Input A = +5V and Output/Input B = 0V
Space Output/Input A = 0V and Output/Input B = +5V

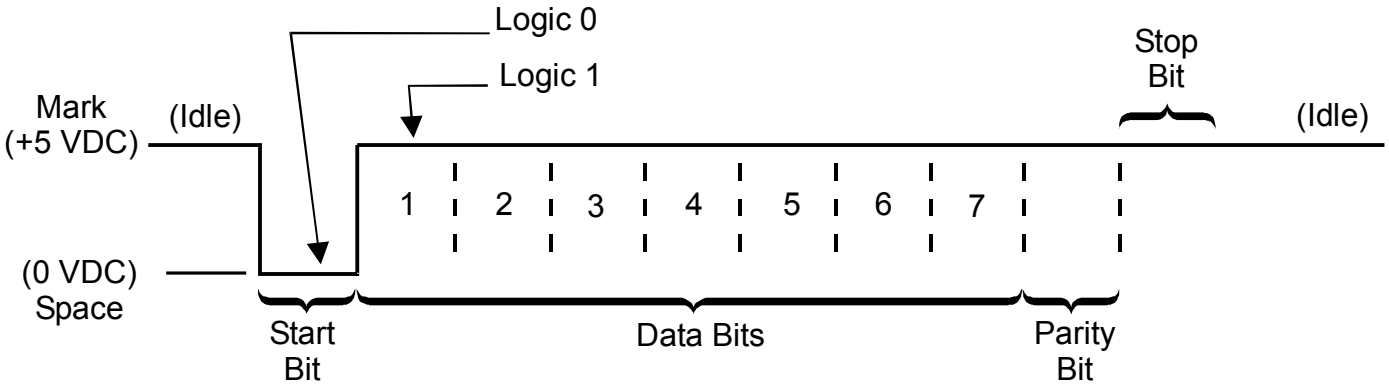


Figure 1-4 RS-422/RS-485 Signaling

Communication Code

The *Xi*III-Series printer sends and receives ASCII (American Standard Code for Information Interchange) characters in one of two formats, Serial Data or Parallel Data.

NOTE: When using the serial data format, the baud rate, number of data and stop bits per character, and parity are selectable. Parity only applies to data transmitted by the XiIII-Series printer. For received data, the parity bit is ignored.

Parallel Data Communications Interface Overview

A standard 36-pin parallel connector is available at the rear of the printer for connection to the data source. Under normal circumstances, data sent from the printer to the host in response to a "Printer Status Request" command is sent through the RS-232 serial port. However, if the host has a properly configured IEEE-1284 parallel port that is recognized by the printer, status information will be returned through the parallel port. Port selection for status information is determined each time the printer is turned on.

Parallel Port Connector

The following table shows the pin configuration and function of a standard PC-to-Printer Centronics® Parallel cable.

36-pin Connector	Description
1	nStrobe/HostClk
2-9	Data Bits 1-8
10	nACK/PtrClk
11	Busy/PtrBusy
12	PError/ACKDataReq
13	Select/Xflag
14	nAutoFd/HostBusy
15	Not Used
16 & 17	Ground
18	+5V @ 1A
19-30	Ground
31	ninit
32	nFault/NDataAvail
33 & 34	Not Used
35	+5V through a 4.7 KW Resistor
36	NSelectIn/1284 active

NOTE: Optional Ethernet Networking Communications via ZebraNet PrintServer II. Refer to the ZebraNet Networking: PrintServer II Operating Guide (45537L) when using this communications option.

Optional Interface Boards

For information about the IBM® plug-compatible Twinax Interface, the IBM® plug-compatible Coax Interface, the RS-485 network interface, refer to the instructions that accompany the interface option kits.

DATA Status Indicator: ON indicates that data processing or printing is taking place, but no data is being received. OFF indicates that no data is being received or processed. FLASHING indicates that data is being received. (Flashing slows down when the printer is unable to accept any more data due to the data input buffer being full. Flashing returns to normal rate when the data input buffer is no longer full and data is again being received.)

Notes

SECTION 2 OPERATIONS OVERVIEW

OPERATOR CONTROLS

This section discusses the functions of the various controls and indicators on the printer. The operator should become familiar with each of these functions.

Front Panel Display

The Front Panel Display communicates operational and programming modes and parameters.

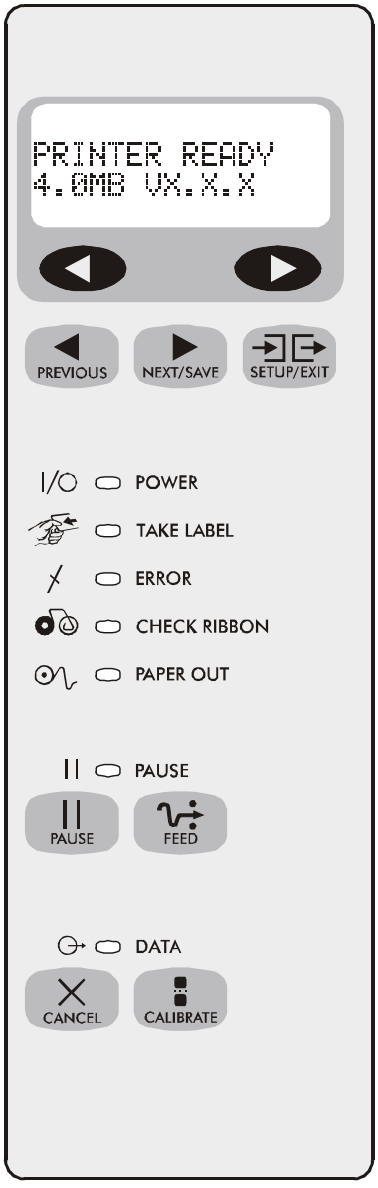


Figure 2-1 Front Panel

Front Panel Keys

Refer To Figure 2-1.

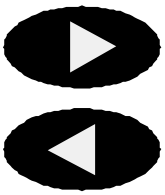
Key	Function
	Starts and stops the printing process. • If the printer is not printing: no printing can occur. • If the printer is printing: printing stops once the current label is complete. Press to remove error messages from the display. ***NOTE: Pause mode can also be activated via ZPL II (~PP, ^PP).***
	Forces the printer to feed one blank label each time the key is pressed. • Printer not printing: one blank label immediately feeds. • Printing: one blank label feeds after the current batch of labels is complete. ***NOTE: Equivalent to the Slew to Home Position (~PH, ^PH) ZPL II instruction.***
	When in the pause mode, this key will cancel print jobs. • Print job in queue: press once for each print job to be deleted. • Press and hold for several seconds to cancel all print jobs in the printer's memory. The DATA light will turn off.
	When in Pause mode, this key will calibrate the printer for: • Media length. • Media type (continuous or non-continuous). • Print mode (direct thermal or thermal transfer). • Sensor values.
NOTE: The keys below are used only when configuring the printer. Specific uses of these keys are explained in the Configuration section of the User's Guide (P/N 48025L).	
	• Scrolls back to the previous parameter. • Press and hold to quickly go backward through parameter sets.
	• Scrolls forward to the next parameter. (Saves any changes you've made in the configuration and calibration sequence.) • Press and hold to quickly advance through parameter sets.
	Enters and exits the configuration mode.
	These keys change the parameter values. They are used in different ways depending on the parameter displayed. Common uses are: to increase/decrease a value, answer "yes" or "no," indicate "on" or "off," scroll through several choices, input the password, or set up the printer for a firmware download.

Table 2-1 Front Panel Keys

Front Panel Lights

Refer To Figure 2-1

NOTE: If two operating conditions occur simultaneously (for example, one that causes a light to be on constantly and one that causes the same light to flash), the light will flash.

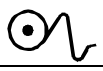
Light	Status	Indication
Power	Off	The printer is off or power is not applied.
	On	The printer is on.
Take Label	Off	Normal operation.
	Flashing	(Peel-off mode only.) The label is available. Printing is paused until the label is removed.
Error	Off	Normal operation — no printer errors.
	Flashing	A printer error exists. Check the display screen for more information.
Check Ribbon	Off	Normal operation — ribbon (if used) is properly loaded.
	On	Printing is paused, the front panel displays a warning message, and the PAUSE light is on. • If the printer is in direct thermal mode: Ribbon is loaded. • If the printer is in thermal transfer mode: No ribbon is loaded.
Paper Out 	Off	Normal operation — media is properly loaded.
	On	No media is under the media sensor. Printing is paused, the display shows an error message, and the PAUSE light is on.
Pause	Off	Normal operation.
	On	The printer has stopped all printing operations. Either the PAUSE key was pressed, a pause command was included in the label format, the on-line verifier detected an error, or a printer error was detected. Refer to the display screen for more information.
Data	Off	Normal operation. No data being received or processed.
	On	Data processing or printing is taking place. No data is being received.
	Flashing	The printer is receiving data from or sending status information to the host computer. Flashing slows when the printer cannot accept more data, but returns to normal once data is again being received.

Table 2-2 Front Panel Lights

LOADING MEDIA

NOTE: A calibration must be performed when media and ribbon (if used) are first installed in the printer, or when a different type of media or ribbon is being used.

Tear-Off Mode

Refer to Figure 2-2.

1. Open the printhead.
2. Slide the media guide and media supply guide as far from the printer frame as possible. Flip down the media supply guide.
3. Load media as shown.
4. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but not restrict, the edge of the roll.
5. Close the printhead.

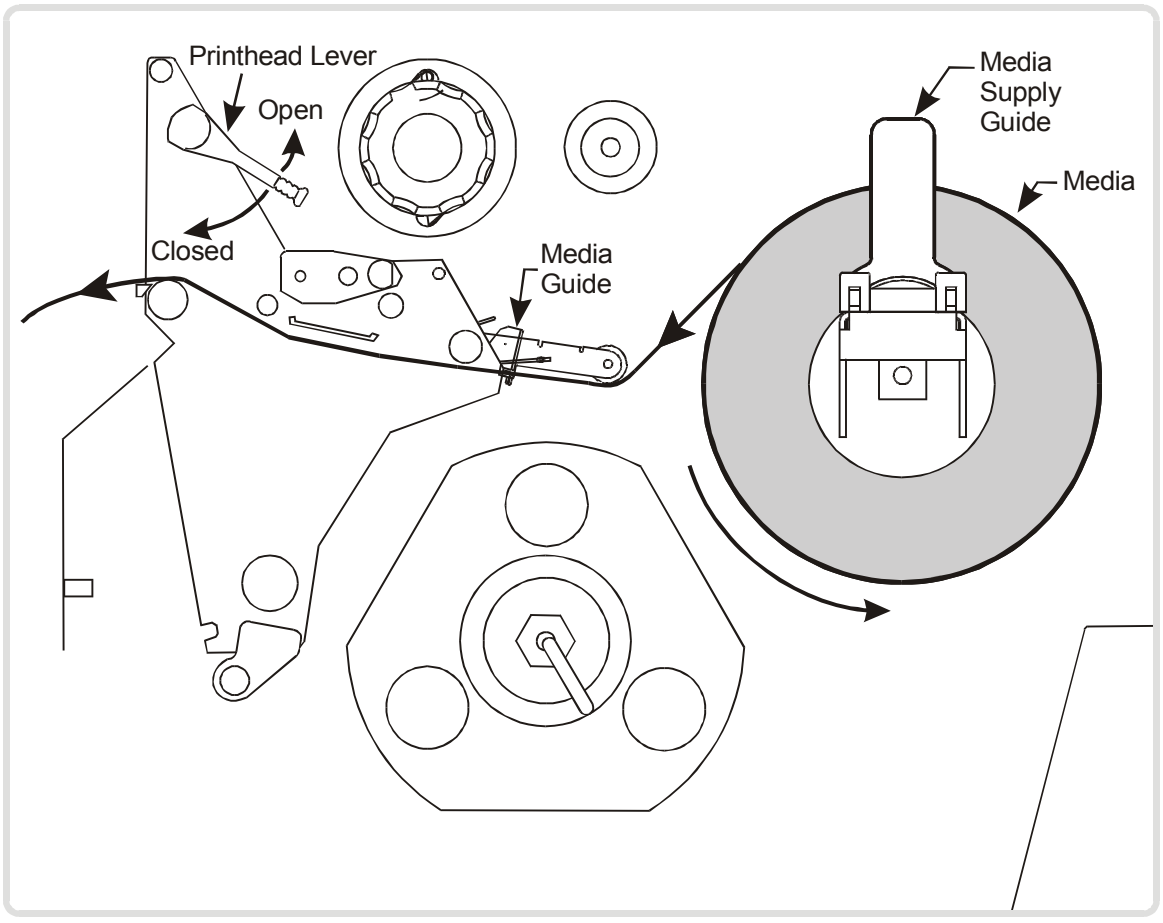


Figure 2-2 Roll Media Loading Tear-Off Mode

Peel-Off Mode

NOTE: Rewind option required.

Refer to Figure 2-3.

1. Remove the rewind plate from the front of the printer (if installed). Store it on the two mounting screws on the inside of the front panel.
2. Open the printhead.
3. Slide the media guide and media supply guide as far from the printer frame as possible. Flip down the media supply guide.
4. Load media as shown.

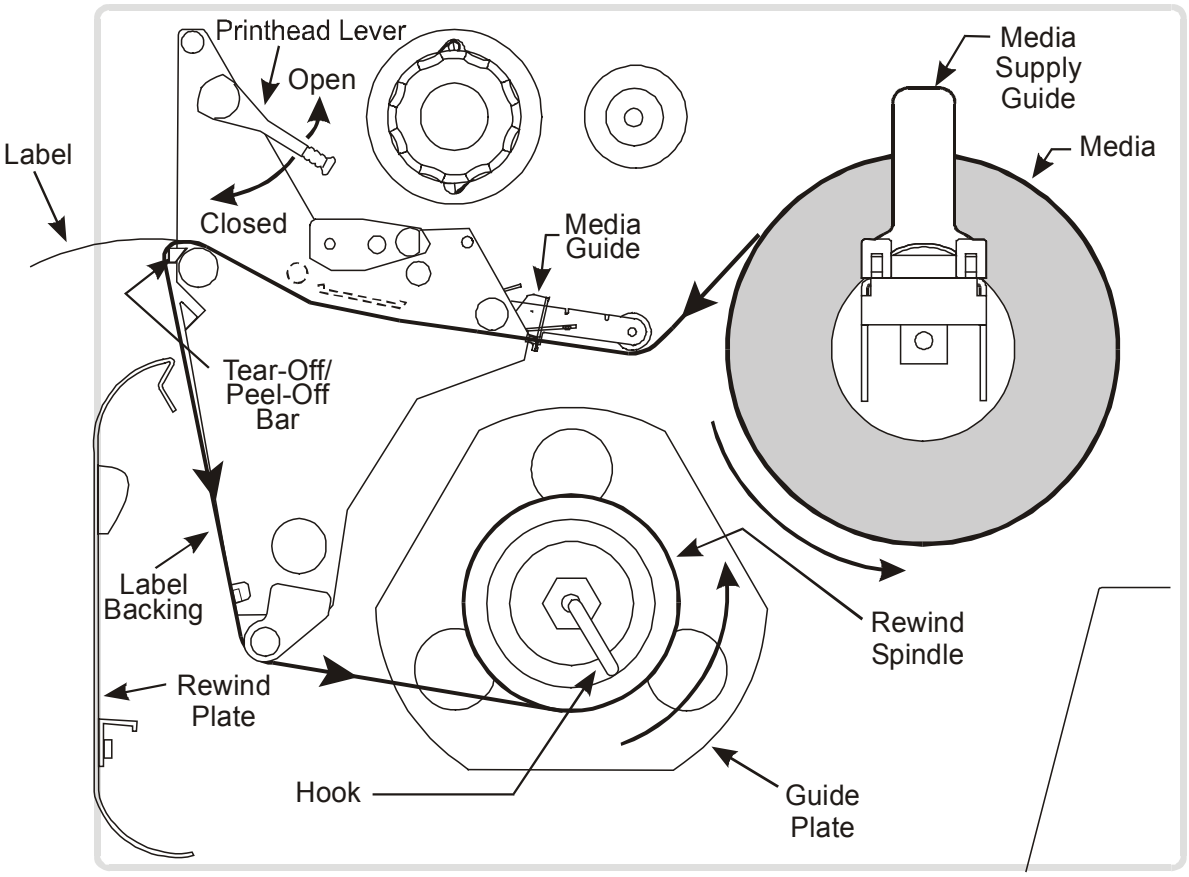


Figure 2-3 Peel-Off Mode Loading

5. When loading media, allow approximately 36" (914 mm) of media to extend past the tear-off/peel-off bar. Remove all labels from this portion to create a leader.
6. Remove the hook from the rewind spindle. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.
7. Wind the label backing around either the 3" (76 mm) core or the rewind spindle and reinstall the hook.

8. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but not restrict, the edge of the roll.

Before closing the printhead, make sure:

- The media is positioned against the inside guides.
- The media is taut and parallel with itself and the pathway when wound onto the rewind spindle/core.

9. Close the printhead.

To discard the label backing from the rewind spindle, refer to "Removing the Label Backing Material" on page 2-12.

Rewind Mode (for Printers Without the Cutter Option)

NOTE: Rewind option required.

Refer to Figure 2-4.

1. Remove the rewind plate from its storage location in front of the print mechanism inside the media compartment.
2. Invert the rewind plate so that the lip on the attached hook plate points down.
3. Insert the hook plate lip approximately ½" (13 mm) into the lower opening in the side plate.
4. Align the upper end of the rewind plate with the corresponding opening in the side plate. Slide in the rewind plate so that it stops against the printer's main frame.
5. Open the printhead.
6. Slide the media guide and media supply guide as far from the printer frame as possible. Flip down the media supply guide.
7. Load media as shown.
8. When loading media, allow approximately 36" (914 mm) of media to extend past the printhead. Remove all labels from this portion to create a leader.
9. Remove the hook from the rewind spindle. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.
10. Wind the label backing around either the 3" (76 mm) core or the rewind spindle and reinstall the hook.
11. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but not restrict, the edge of the roll.

Before closing the printhead, make sure:

- The media is positioned against the inside guides.
- The media is taut and parallel with itself and the pathway when wound onto the rewind spindle/core.

12. Close the printhead.

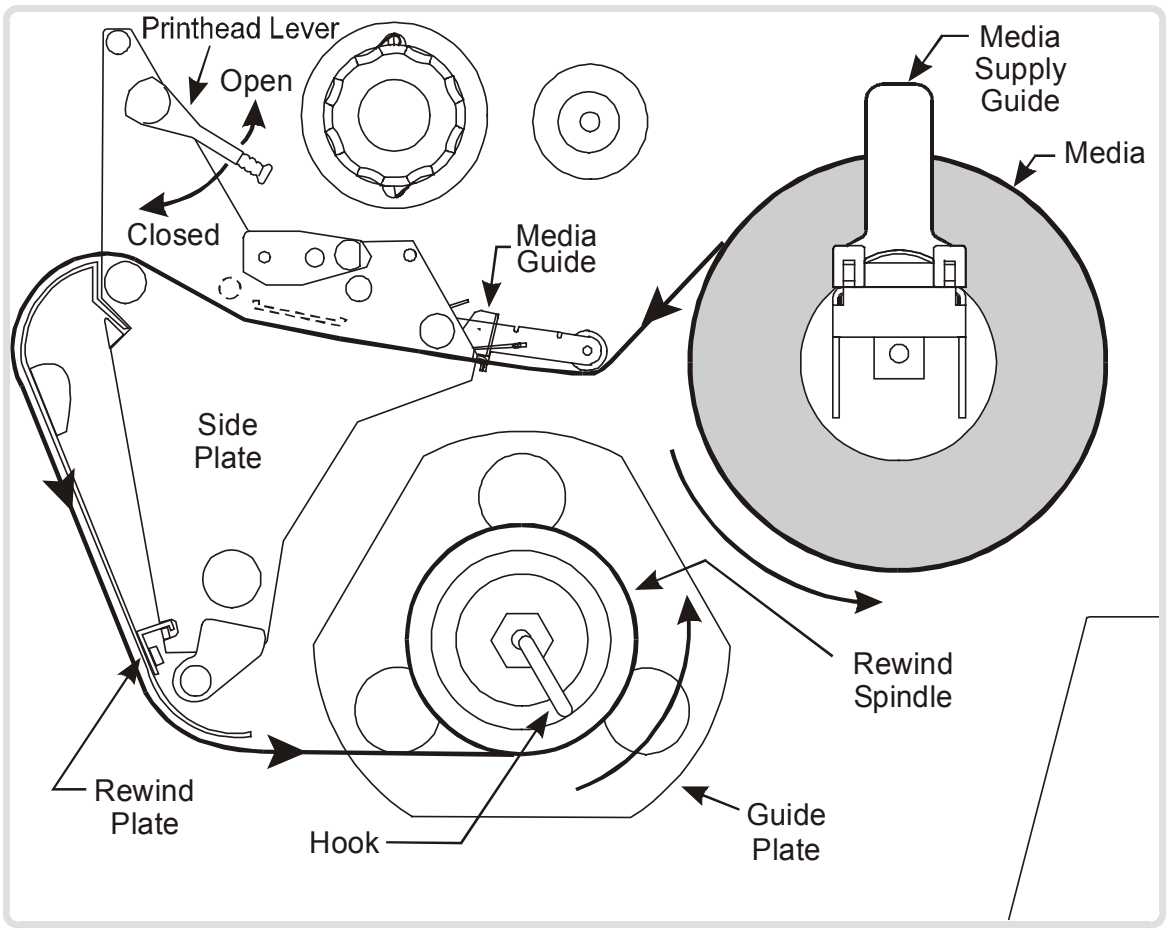


Figure 2-4 Rewind Mode w/o Cutter Option Loading

Cutter Mode

NOTE: Cutter option required.

Refer to Figure 2-5.

1. Open the printhead.
2. Slide the media guide and media supply guide as far from the printer frame as possible. Flip down the media supply guide.
3. Load media as shown.
4. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but not restrict, the edge of the roll.
5. Close the printhead.
6. The printer will automatically feed out and cut one label when the printer is turned on.

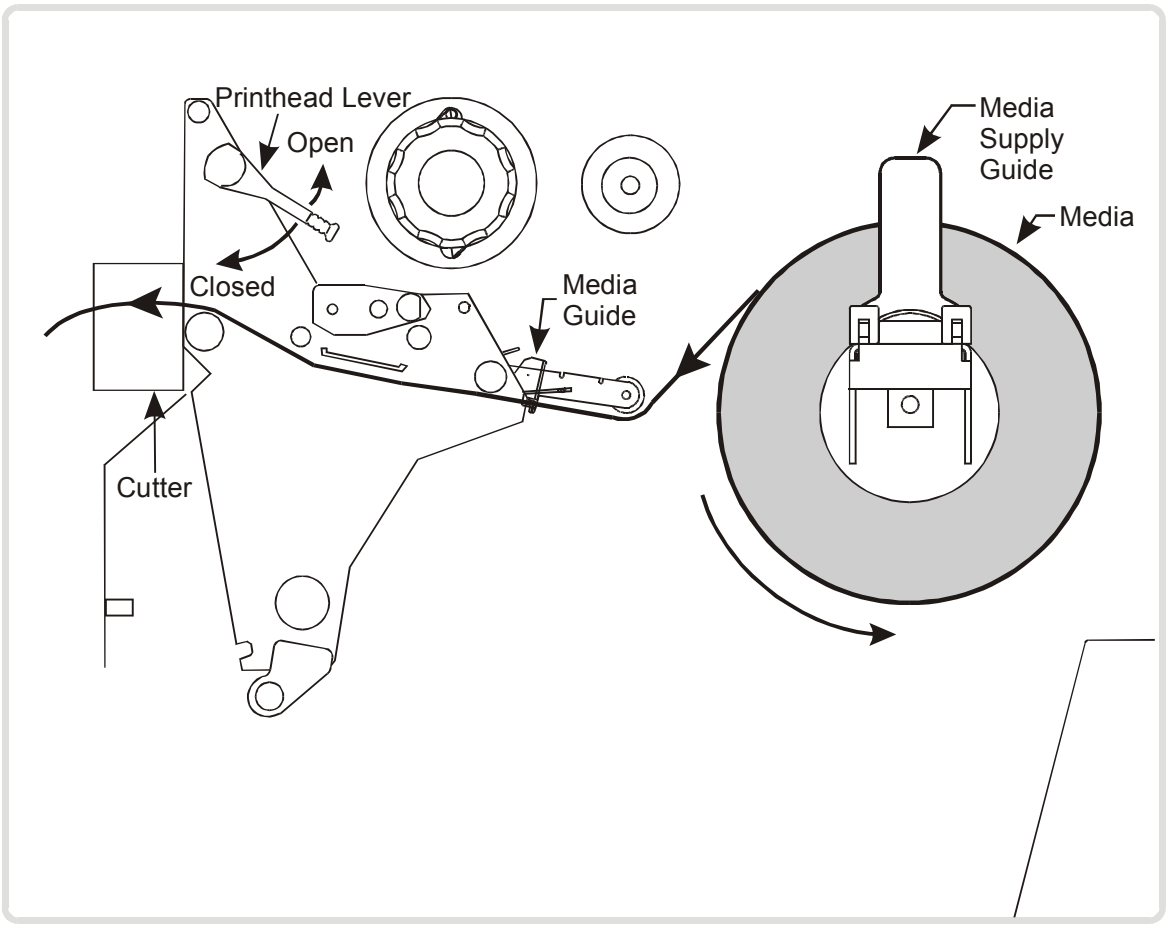


Figure 2-5 Cutter Mode Loading

Rewind Mode (for Printers With the Cutter Option)

NOTE: Cutter and rewind options required.

Refer to Figure 2-6.

1. Remove the rewind plate from its storage location in front of the print mechanism inside the media compartment.
2. Invert the rewind plate so that the lip on the attached hook plate points down.
3. Insert the hook plate lip approximately ½" (13 mm) into the lower opening in the side plate. Slide in the rewind plate so that it stops against the printer's main frame.
4. Insert the two small tabs on the rewind plate into the corresponding slots in the cutter support bracket. (The rewind plate should spring into the proper position.)
5. Open the printhead.
6. Slide the media guide and media supply guide as far from the printer frame as possible. Flip down the media supply guide.
7. Load media as shown.

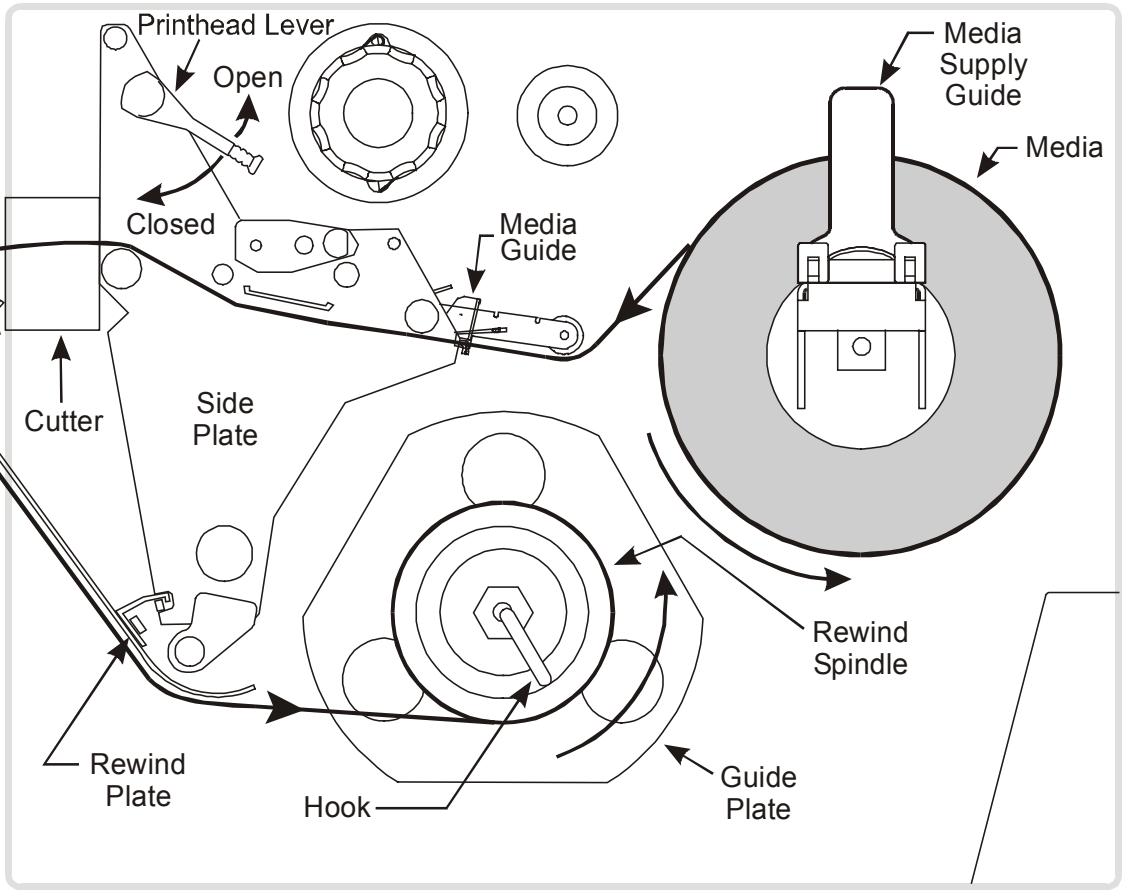


Figure 2-6 Rewind Mode w/Cutter Loading

8. When loading media, allow approximately 36” (914 mm) of media to extend past the printhead. Remove all labels from this portion to create a leader.
9. Remove the hook from the rewind spindle. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.
10. Wind the label backing around either the 3” (76 mm) core or the rewind spindle and reinstall the hook.
11. Flip up the media supply guide. Slide in the media guide and media supply guide so they just touch, but not restrict, the edge of the roll.

Before closing the printhead, make sure:

- The media is positioned against the inside guides.
- The media is taut and parallel with itself and the pathway when wound onto the rewind spindle/core.

12. Close the printhead.

Fanfold Media Loading

Refer to Figure 2-7.

Fanfold media feeds through either the bottom or rear access slot from outside the printer.

1. Open the printhead.
2. Slide the media guide as far from the printer frame as possible.
3. Load media as shown. If in cutter mode, route media through the cutter.
4. Slide in the media guide so it just touches, but not restricts, the edge of the roll.
5. Close the printhead.

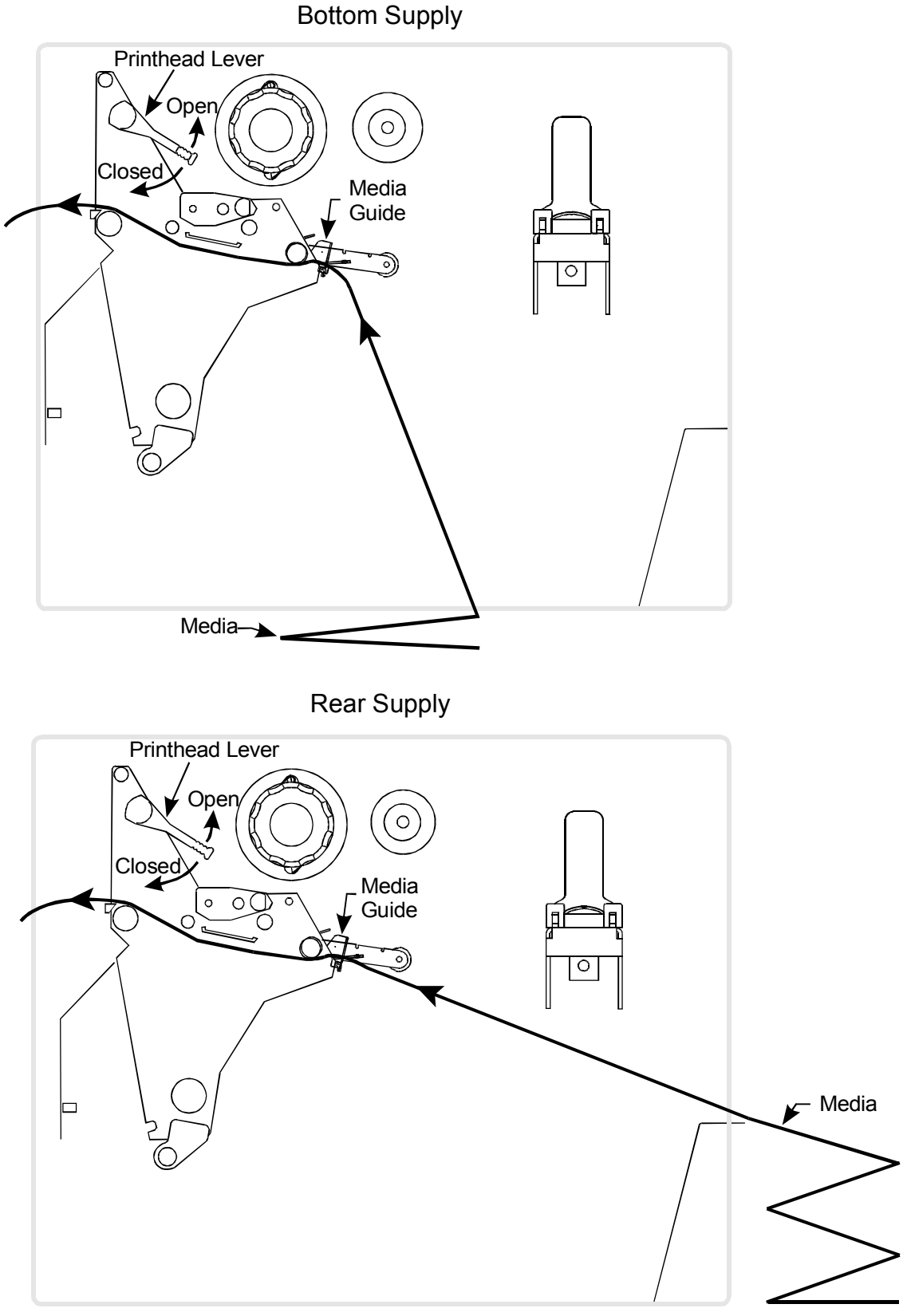


Figure 2-7 Fan Fold Media Loading

Removing the Label Backing Material

Since the rewind spindle holds the backing from a standard-size media roll, we recommend that you perform this procedure whenever you change the media.

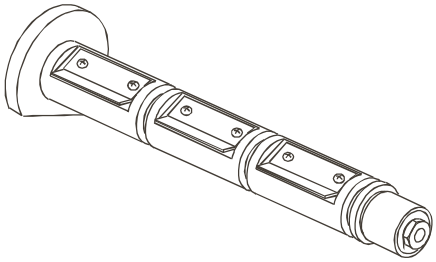
To remove the backing material from the rewind spindle, follow these steps (you don't need to turn off the printer for this procedure).

1. Unwind approximately 36" (914 mm) of backing from the rewind spindle. Cut it off at the spindle.
2. Pull out the hook. Slide the backing material off of the rewind spindle and discard.
3. Wind the media around the rewind spindle once or twice and reinstall the hook. Continue winding to remove any slack in the media.

Ribbon Loading

To load ribbon, refer to Figure 2-8 and follow the procedure below.

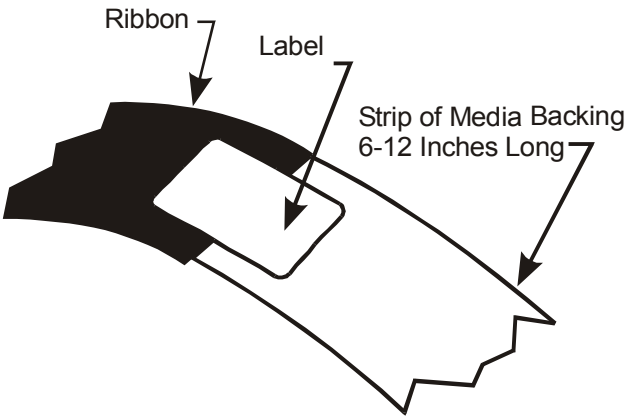
NOTE: Use ribbon that is at least as wide as the media. The smooth backing of the ribbon protects the printhead from wear and premature failure due to excessive abrasion. (For the direct thermal print mode, ribbon is not used and should not be loaded in the printer.)



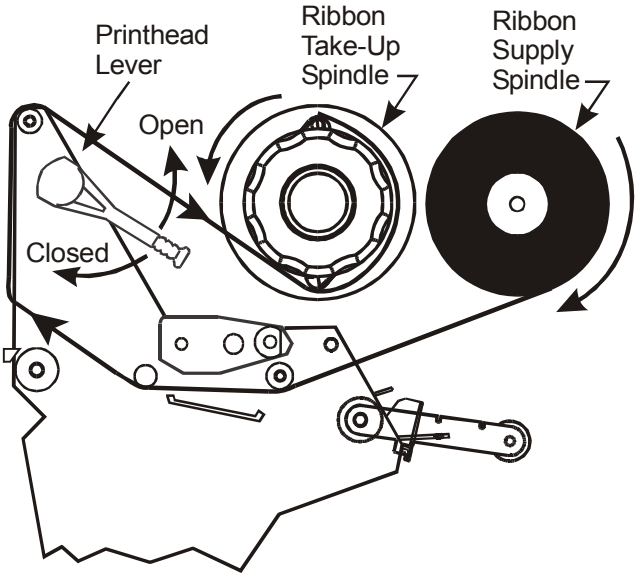
1. Align the segments of the ribbon supply spindle.
2. Place the ribbon roll on the ribbon supply spindle.

NOTE: Make sure that the core is pushed up against the stop on the ribbon supply spindle and that the ribbon is aligned squarely with its core. If this is not done, the ribbon may not cover the printhead entirely on the inside, exposing print elements to potentially damaging contact with the media.

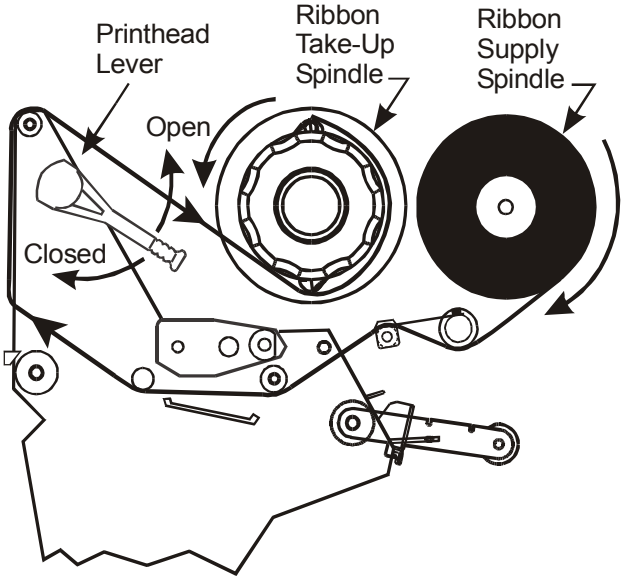
3. Open the printhead.
4. (Optional) To make ribbon loading and unloading easier, make a leader for your ribbon roll if it doesn't already have one.
5. Tear off a strip of media (labels and backing) about 6-12" (152-305 mm) long from the roll. Peel off a label from this strip. Apply half of this label to the end of the strip and the other half to the end of the ribbon. This acts as a ribbon leader.



6. Thread the ribbon (with leader, if used) as shown without creasing or wrinkling it.
7. Before wrapping the ribbon around the ribbon take-up spindle, ensure that the arrow on the knob aligns with the indented notch (see Figure 2-9 inset).
8. Place the ribbon (with leader, if used) around the ribbon take-up spindle and wind counterclockwise for several turns.
9. Close the printhead.



90*Xi*III/96*Xi*III/140*Xi*III



170*Xi*III/220*Xi*III

Figure 2-8 Ribbon Installation

Ribbon Removal

1. Break the ribbon as close to the ribbon take-up spindle as possible.
2. Refer to Figure 2-9. While holding the ribbon take-up spindle, turn the knob (1) clockwise until it stops. This will cause the ribbon release bars to pivot down (2), easing the spindle's grip on the wound ribbon.
3. Slide the ribbon off the ribbon take-up spindle. Once the spent ribbon has been removed, ensure that the arrow on the knob aligns with the indented notch in the ribbon take-up spindle (see Figure 2-9).
4. Remove the empty core from the ribbon supply spindle.
5. Follow the ribbon loading procedure on page 2-13 to load the new ribbon.

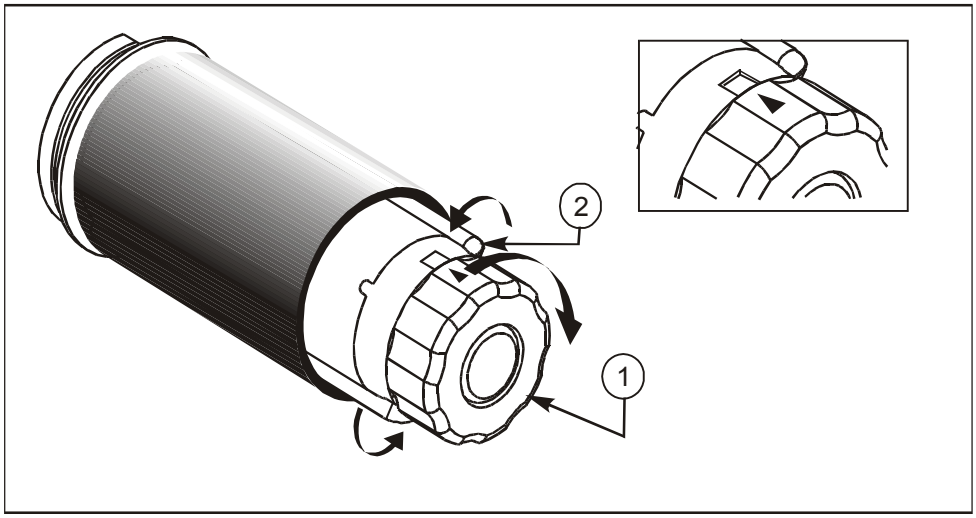


Figure 2-9 Ribbon Removal

POSITIONING THE MEDIA SENSORS

Transmissive Sensor

The web or gap sensor, better known as the "transmissive sensor," detects the gap or hole/notch between labels.

The transmissive sensor actually consists of two sections: a light source (the lower media sensor) and a light sensor (the upper media sensor). The media passes between the two.

The upper media sensor must be positioned:

- Directly over the hole or notch, or
- Anywhere along the width of the media if there is a gap between labels.

NOTE: If you are using continuous media, position the upper media sensor over the media so that the printer can detect an out-of-paper condition.

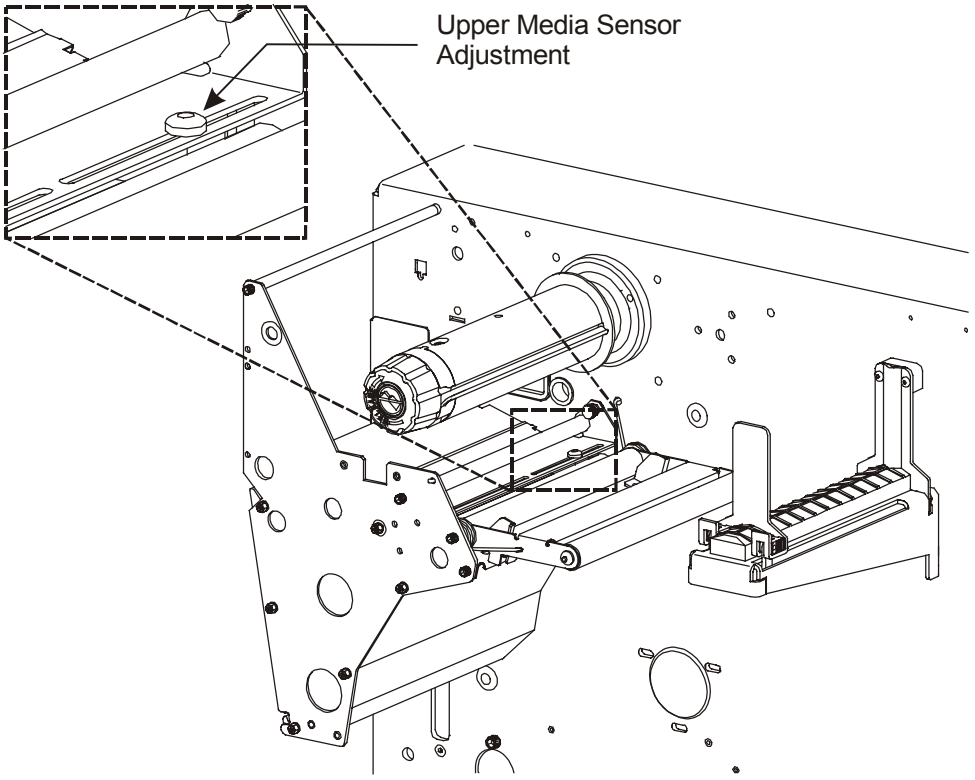


Figure 2-10 Upper Media Sensor Location

Adjusting the Upper Media Sensor

Refer to Figure 2-10. (For clarity, not all printer parts are shown.)

1. Remove the ribbon (if it is installed).
2. Locate the upper media sensor. The upper media sensor "eye" is directly below the adjustment screw head.

3. Slightly loosen the upper media sensor adjustment screw (Phillips head).
4. Using the tip of the screwdriver, slide the upper sensor along the slot to the desired position.
5. Secure the upper media sensor adjustment screw.

Adjusting the Lower Media Sensor

Position the lower media sensor (refer to Figure 2-11) by sliding it in its slot until it is positioned under the upper media sensor.

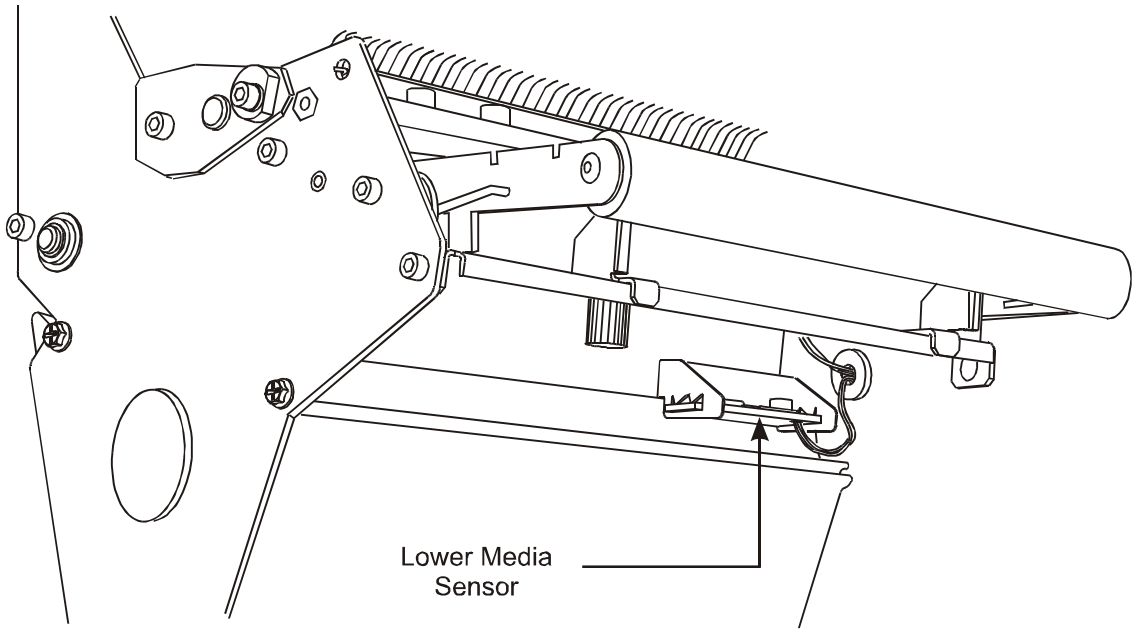


Figure 2-11 Lower Media Sensor Location

BLACK MARK SENSOR

The black mark sensor is in a fixed position and enabled via the front panel (details in “Configuring the Printer” in the User's Guide).

Notes

SECTION 3 TROUBLESHOOTING

Test routines are built into the Zebra *Xi*III-Series printers to aid the technician in diagnosing faults. Some of these tests are enabled by pressing a front panel key while turning the printer power switch ON.

POWER-ON SELF TEST

A Power-On Self Test (POST) is performed each time the printer is turned ON. This test checks for proper initialization of various electronic circuits and establishes starting parameters as those stored in the printer's memory. During this test sequence, the front panel LEDs will turn ON and OFF to ensure proper operation.

At the end of this self test, only the POWER LED will remain lit. If other LEDs are also lit, refer to Basic Troubleshooting, page 3-11.

If the printer is set up for non-continuous media, one or more labels will feed out, up to a maximum length of one label plus three additional inches of media.

To initiate the Power-On Self Test, turn the printer ON using the power switch located at the rear of the printer. The front panel power-on indicator will light. The other front panel LEDs and the Liquid Crystal Display (LCD) monitor the progress and indicate the results of the self test. The normal self test sequence is shown on the following page.

The normal self test sequence is as follows:

1.		All lights turn on simultaneously and then turn off in sequence through the following steps.
2.	SRAM Test	SRAM functionality test performed.
3.	Option ROM Test	Option ROM functionality test performed. The words “Not Installed” will be added to the display if optional ROM is not used.
4.	Printhead Test	Printhead is checked for proper operation.
5.	Processor Test	Processor functionality test performed. The word “Failed” will be added to the display if the test fails.
6.	E-Cubed Test	E-cubed functionality test performed. The word “Failed” will be added to the display if the test fails.
7.	EEPROM Test	EEPROM/PROM functionality test performed. The word “Failed” will be added to the display if the test fails.
8.	Memory Card Test	Optional PCMCIA Memory Card functionality test performed. The word “Failed” will be added to the display if the test fails.
9.		Depending on how the **^MF** (Media Feed) instruction is set, the Printer will feed to the first web or label length, calibrate ribbon and media sensors, or set label length and feed one or more labels.
	Checking Flash	Checking flash memory.
10.	Printer Ready x.x MB VXX.X.X	Printer is ready for operation. Refer to “Configuration" to set specific parameters. Designate prompt language with the **^KL** command or from the menu.

PRINTER SELF TESTS

Introduction

These self tests produce sample labels and provide specific information that help determine the operating conditions for the printer.

Each self test is enabled by holding in a specific front panel key while turning the power switch ON. Keep the key pressed until the front panel LEDs turn ON.

When the Power-On Self Test is completed, the selected printer self test will automatically start.

NOTE: ***When performing self tests, all data interface cables should be disconnected from the printer.***

It is recommended that full-width media be used when performing these tests. Labels less than full-width in size will lose printing on the right side. Label length will determine the amount of print starting at the top of the label.

When canceling a self test prior to its actual completion, always turn the printer power OFF and then back ON to reset the printer.

CANCEL Key Self Test

This self test will print a single label which contains a listing of the current configuration parameters stored in configuration (EEPROM) memory. See Figure 3-1. To perform this self test, press the CANCEL key while turning the power switch ON

The configuration may be changed either temporarily (for specific label formats or ribbon and label stock) or permanently (by saving the new parameters in EEPROM memory). Saving new parameters occurs whenever a printer configuration procedure is performed. Refer to the user's guide for further details on the printer configuration procedure.

```
PRINTER CONFIGURATION

Zebra Technologies
ZTC 140XiIII-200dpi

+10.................. DARKNESS
+000................. TEAR OFF
TEAR OFF............. PRINT MODE
NON-CONTINUOUS..... MEDIA TYPE
WEB.................. SENSOR TYPE
THERMAL-TRANS........ PRINT METHOD
128 0/8 MM........... PRINT  WIDTH
1722................. LABEL LENGTH
39.0IN   988MM..... MAXIMUM LENGTH
PARALLEL............. PARALLEL COMM.
RS232................ SERIAL COMM.
19200................ BAUD
8 BITS............... DATA BITS
NONE................. PARITY
2 STOP BITS.......... STOP BITS
XON/XOFF............. HOST HANDSHAKE
NONE................. PROTOCOL
000.................. NETWORK ID
NORMAL MODE.......... COMMUNICATIONS
< >  7EH............. CONTROL PREFIX
<^>  5EH............. FORMAT PREFIX
<,>  2CH............. DELIMITER CHAR
ZPL II............... ZPL MODE
FEED................. MEDIA POWER UP
FEED................. HEAD CLOSE
DEFAULT.............. BACKFEED
+010................. LABEL TOP
+0000................ LEFT POSITION
0000................. HEAD TEST COUNT
0500................. HEAD RESISTOR
OFF.................. VERIFIER PORT
OFF.................. APPLICATOR PORT
057.................. WEB S.
075.................. MEDIA S.
064.................. RIBBON S.
092.................. MARK S.
092.................. MARK MED S.
013.................. MEDIA LED
046.................. RIBBON LED
000.................. MARK LED
+10.................. LCD ADJUST
DPSWFXM.............. MODES ENABLED
..................... MODES DISABLED
1024 8/MM FULL...... RESOLUTION
..................... SOCKET 1 ID
V33.10.0    <-...... FIRMWARE
..................... HARDWARE ID
CUSTOMIZED.......... CONFIGURATION
12288............R: RAM
4096.............B: MEMORY CARD
2048.............E: ONBOARD FLASH
NONE................. FORMAT CONVERT
007 POWER SUPPLY.... J12 INTERFACE
*** CUTTER.......... J11 INTERFACE
005 DISPLAY......... J10 INTERFACE
*** NONE............ J9 INTERFACE
*** NONE............ J8 INTERFACE
*** NONE............ J7 INTERFACE
..................... TWINAX/COAX ID
NONE................. ZEBRA NET II

FIRMWARE IN THIS PRINTER IS COPYRIGHTED
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Figure 3-1 CANCEL Key Test Sample Label

PAUSE Key Self Test

1. The initial self test prints 15 labels (see Figure 3-2) at a speed of 1" per second for the 96*Xi*III and 2.4” per second for all others; then automatically PAUSES the printer. Each time the PAUSE key is pressed, additional 15 labels will print.
2. While the printer is PAUSED, press the CANCEL key once to alter the self test. Now each time the PAUSE key is pressed, the printer will print the self test labels at 4" per second for the 96 *Xi*III, 6” per second for all others. Fifteen (15) additional labels will be printed each time the PAUSE button is pressed.
3. While the printer is PAUSED, press the CANCEL key a second time to change the self test print speed back to of 1" per second for the 96*Xi*III and 2.4” per second for all others. However, each time the PAUSE key is pressed, the printer prints 50 labels.
4. While the printer is PAUSED, press the CANCEL key a third time to change the self test print speed to 6” per second (4" for 96*Xi*III). Each time the PAUSE key is pressed, the printer prints 50 labels.
5. While the printer is PAUSED, press the CANCEL key a fourth time to change the self test print speed to the printer’s fastest speed. Each time the PAUSE key is pressed, the printer prints 15 labels.

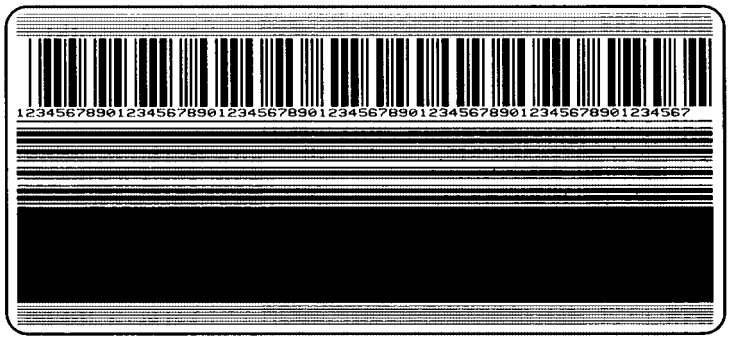


Figure 3-2 PAUSE Key Test Sample Label

FEED Key Self Test

NOTE: The CANCEL Key Self Test should be performed prior to this self test.

Information on the printed configuration label (CANCEL Key Self Test) will be used with the results of this self test to determine the best darkness setting for a specific media/ribbon combination.

The FEED key self test label will print out at various positive and negative darkness settings relative to the darkness value shown on the configuration label. See the label example in Figure 3-3. Inspect these labels and determine which one has the best darkness setting for the application. This value can be entered into the printer by configuring the “Setting Darkness” parameter found in the configuration section of the user’s guide.

The value printed on the selected test label is added to (plus) or subtracted from (minus) the “Darkness” value specified on the configuration label.

The resulting numeric value (0 to 30) that is best for that specific media/ribbon combination should be entered as the "Darkness" parameter.

Figure 3-3 FEED Key Self Test Sample Label

FEED Key and PAUSE Key Self Test

To temporarily reset the printer configuration to the factory default values, press these two keys at the same time, while turning the power ON. The factory default values will be active until power is turned OFF. **If factory default values are "saved" during configuration, a media calibration procedure must be performed and some parameters must be reconfigured.** Refer to the printer user's guide for more details.

PAUSE Key and CANCEL Key Self Test

This self test can be used to verify proper printer operation after parts have been replaced or adjusted. When activated, the printer prints a maximum of 500 head test labels. Each label back feeds prior to printing and feeds forward to the rest position after printing. A serialized number will print on each label. Press the PAUSE key or turn the printer power OFF to stop printing. See Figure 3-5 for a sample label.

FEED Key and CANCEL Key Self Test

This self test is normally performed during the manufacturing process or after a major overhaul of the mechanical assemblies. This test prints seven pre-programmed label formats at speeds of 6" and 2" per second. The printer will automatically PAUSE after each format. The sequence of label formats is shown in Table 3-1. Refer to Figures 3-4 through 3-10 for sample labels.

FORMAT	PRINTING	TEST FUNCTION
1	20 at 6 ips*	Left Ribbon Wrinkle Test
2	20 at 6 ips*	Right Ribbon Wrinkle Test
3	20 at 6 ips*	Bar Code Wrinkle Test (Code-39)
4	20 at 2 ips**	Left Ribbon Wrinkle Test
5	20 at 2 ips**	Right Ribbon Wrinkle Test
6	20 at 2 ips**	Bar Code Wrinkle Test (Code-39)
7	20 at 6 ips*	Useable Area Test
8	20 at 6 ips*	Head Temperature Test
9	20 at 6 ips*	Upper Smear Test
10	20 at 6 ips*	Lower Smear Test
11	20 at 2 ips**	Useable Area Test
12	20 at 2 ips**	Head Temperature Test
13	20 at 2 ips**	Upper Smear Test
14	20 at 2 ips**	Lower Smear Test

* 96*Xi*III operates at 4 ips
** 96*Xi*III operates at 1 ips

Table 3-1 Format Sequence

Communications Diagnostics Test

This test is controlled by configuring the "Setting Communications Mode" parameter found in the configuration section of the printers user's guide. Refer to Figure 3-4 for a sample label resulting from this test.

NOTE: This label will be inverted when printed.

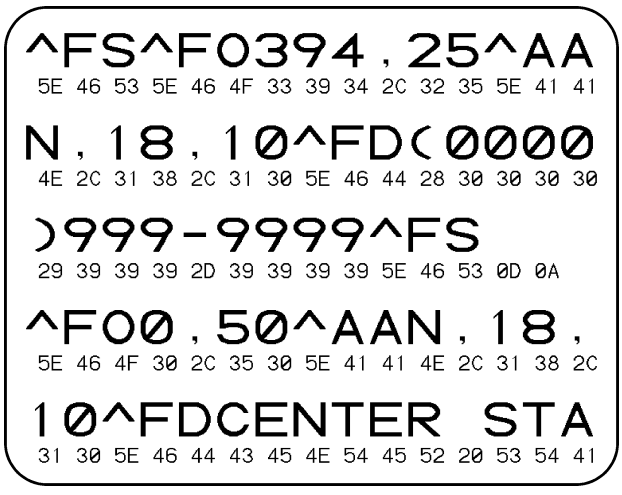


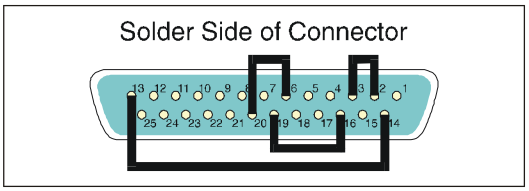
Figure 3-4 Communications Diagnostics Self Test

EXTENDED PRINTER DIAGNOSTICS

Additional diagnostic tests are available for printhead assembly adjustments. These diagnostic tests are only accessible when the data interface cable is disconnected from the printer and a loopback connector is attached in its place.

The serial loopback connector is a 25 pin "D" Type (DB25P – Male) with the following pins tied together.

- Pins 2 and 3
- Pins 6 and 20
- Pins 13 and 14
- Pins 16 and 19



The parallel loopback connector is a standard 36-pin parallel connector mounted to a small printed circuit board. This connector is available from Zebra Technologies as part # 44680M.

For each of these diagnostic tests, the printer will "transmit" the test label format out of the data interface connector to the loopback connector. The loopback connector passes the test label format to the printer as "received data" and the test label is printed.

PAUSE Key Loopback Test

This test demonstrates the media movement capabilities of the printer and provides a test label to view while making print quality adjustments.

With the loopback connector in place, press the PAUSE key while turning the power switch ON.

After the Power-On Self Test, the printer will print 500 head test labels. Each label will back feed prior to printing and feed to the rest position after printing.

A serialized number will print on each label for label comparison purposes if required. See label example in Figure 3-5. The PAUSE key can be used to stop and restart the printing operation.

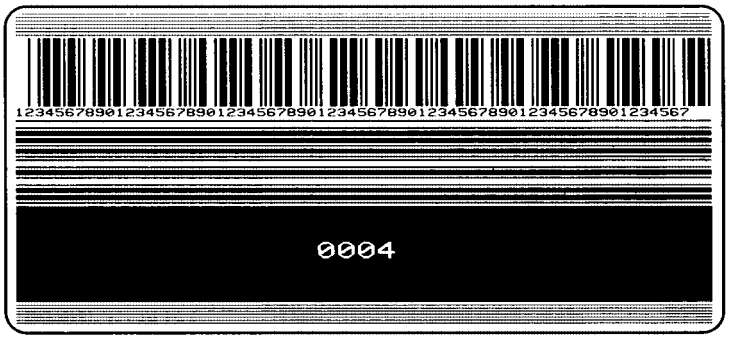


Figure 3-5 PAUSE Key Loopback Test Sample Label

FEED Key Loopback Test

With the loopback connector in place, press the FEED key while turning the power switch ON.

After the Power-On Self Test, the printer will begin printing the same series of label formats as shown in Table 3-1 for FEED key/CANCEL key test. The printer will pause at the end of each printed format. Press the PAUSE key to begin printing the next format. Sample labels are shown in Figures 3-6 through 3-12.

The PAUSE key can be used to stop and restart the printing operation. When the printer is paused, the CANCEL key can be used to move to the next label format.

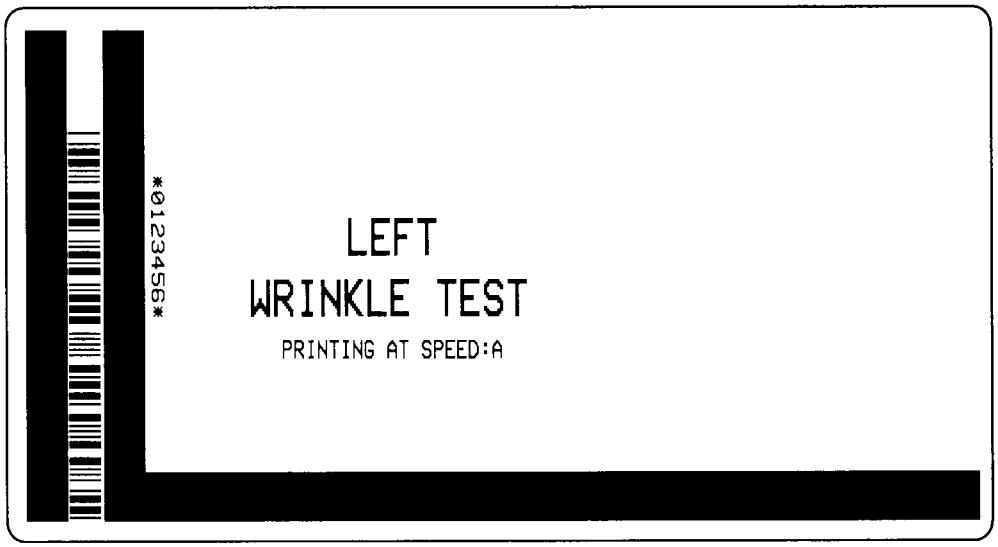


Figure 3-6 Format 1 (4) Test Sample Label

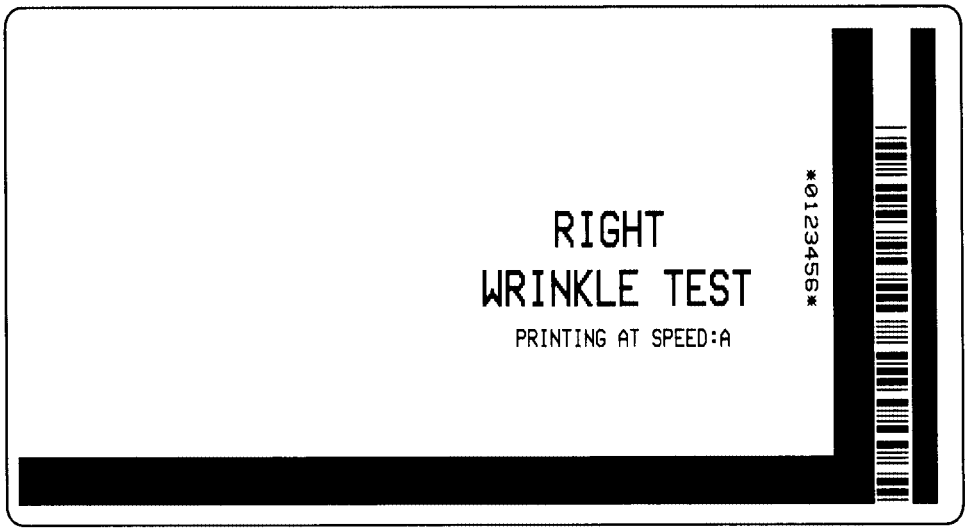


Figure 3-7 Format 2 (5) Test Sample Label

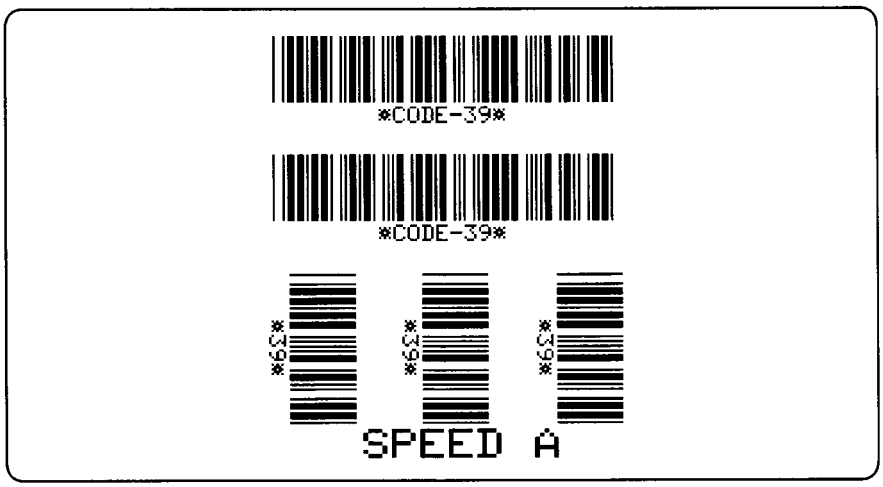


Figure 3-8 Format 3 (6) Test Sample Label

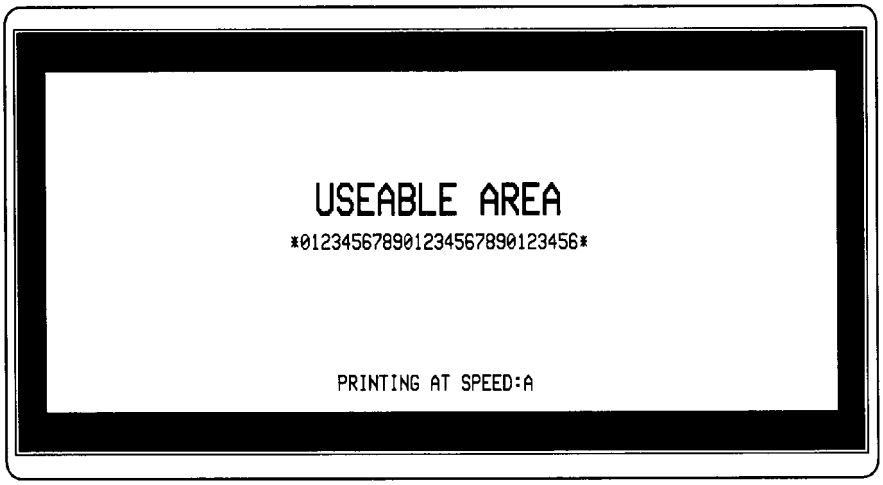


Figure 3-9 Format 7 (11) Test Sample Label

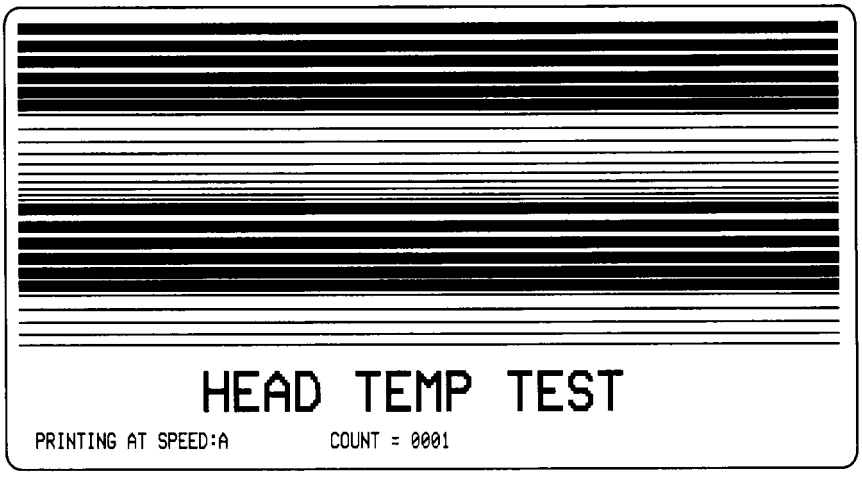


Figure 3-10 Format 8 (12) Test Sample Label

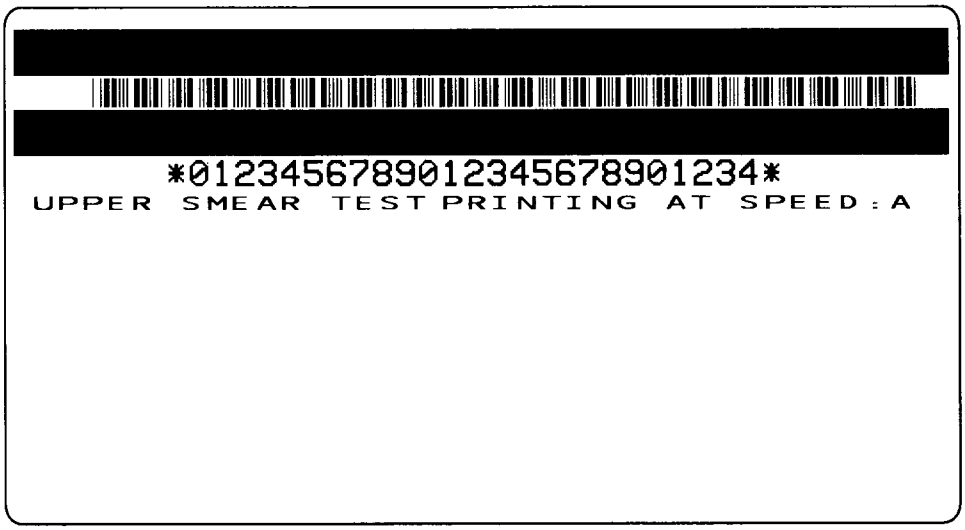


Figure 3-11 Format 9 (13) Test Sample Label

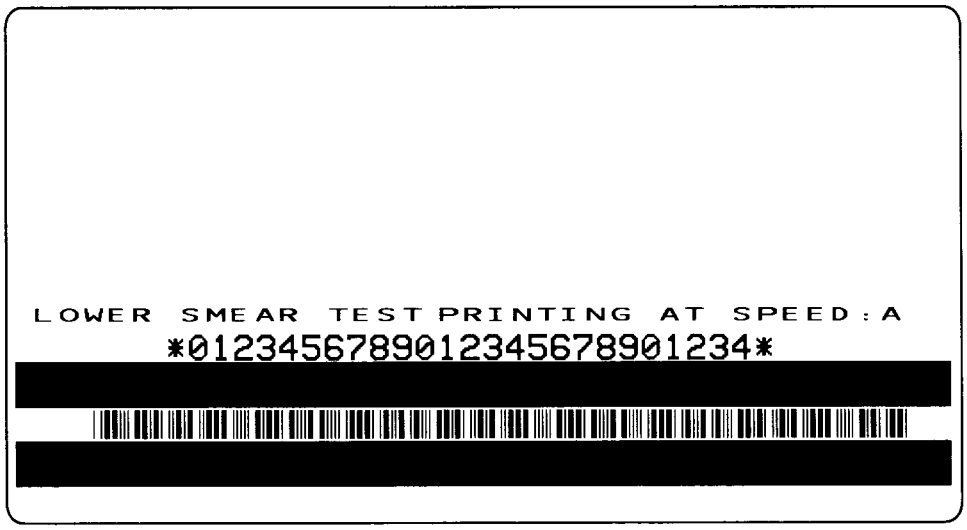


Figure 3-12 Format 10 (14) Test Sample Label

BASIC TROUBLESHOOTING

Consult the Troubleshooting Table that follows and compare the printer output to the sample labels provided on the following pages to improve the quality of your labels.

SYMPTOM	DIAGNOSIS	ACTION
All LEDs light, but nothing displays on LCD and printer will not operate.	Main logic board or flash faulty.	Download new flash or replace the main logic board.
All LEDs flash on and off.	No significant amount of DRAM tested good.	Replace the main logic board.
Take Label LED flashing.	Printer misconfigured for Peel-Off Mode.	If peel-off is desired, check take label sensor.
Printer locks up while running Power-On Self Test.	Main logic board failure.	Replace main logic board.
EEPROM CHECKSUM INVALID	EEPROM checksum is incorrect.	Replace the main logic board.
ERROR CONDITION PAPER OUT Printer stops and ERROR LED flashes.	No media loaded or incorrectly loaded.	Load media correctly.
	Misadjusted media sensor.	Check media sensor position and sensitivity.
	Maximum label length set shorter than label length.	Verify maximum label length setting is correct.
	Printer set for non-continuous media, but continuous media is loaded.	Install proper media or reset printer for current media type.
ERROR CONDITION RIBBON OUT Printer stops and ERROR LED flashes.	**For thermal transfer:** ribbon not loaded or incorrectly loaded. or Ribbon sensor not sensing ribbon that is correctly loaded.	1. Load ribbon correctly. 2. Insure snap plate is properly installed. 3. Perform media and ribbon sensor calibration.
WARNING RIBBON IN	**For Direct Thermal:** Ribbon loaded unnecessarily.	Remove ribbon. Verify snap plate is properly installed.
ERROR CONDITION HEAD OPEN Printer stops and ERROR LED flashes.	Printhead is not fully closed.	Close printhead completely.
	Head open sensor not detecting position flag, or flag not in the proper position.	Check head open sensor and flag for proper operation.

SYMPTOM	DIAGNOSIS	ACTION
WARNING HEAD OVERTEMP Printer stops and ERROR LED flashes.	Printhead element is overheated.	Printer resumes printing when the printhead element cools to a normal operating temperature.
WARNING HEAD UNDERTEMP Printer stops and ERROR LED flashes.	Printhead element is not hot enough to print properly.	Environment too cold for proper printing. Relocate printer to warmer area.
ERROR CONDITION HEAD ELEMENT BAD Experiencing print quality problems.	Print head element is going bad.	To override this message, (1) place ^JT in your format and then (2) ~JO to turn off the HEAD TEST. Clean printhead and test for proper printing. Replace print head if necessary.
ERROR CONDITION CUTTER JAMMED	The cutter blade is in the media path.	Turn the power OFF. Remove the media, reload the media and turn power ON. If the error condition still exists, check cutter sensors and control board. Replace if necessary.

SYMPTOM	DIAGNOSIS	ACTION
Printer stops and PAUSE LED lights. LCD displays: ERROR CONDITION CUTTER JAMMED	Not enough memory to perform the function indicated in the second line of the display. (It is possible that the printer is configured for continuous label stock with the maximum label length set too long.) Functions: 1. Creating a bitmap - bitmap size is larger than the label length/width specified. 2. Storing a bitmap - not enough memory available to store the bitmap created. 3. Building a format - label is too complex. 4. Storing a format - format size is too large to fit in available memory. 5. Storing a graphic - graphic image is too large to fit in the available memory. 6. Storing a font - not enough memory to store the font.	You may do any of the following: A. STORING ERRORS - With PAUSE ON, use the ~HM ZPL II command to display the amount of memory available. Then redesign the graphic/format to fit in the available memory or remove items from memory to create more space. Or Press PAUSE to skip that step in the process and continue to the next step. B. With PAUSE ON, press CANCEL and the printer skips that label formatting process and continues to the next label format. C. Turn power OFF to clear printer memory and start all over again.
Poor Print Quality.	Darkness set too low.	Reconfigure darkness setting.
	Incorrect media and Ribbon.	Replace media and ribbon.
	Printhead just replaced.	Insure printhead is installed properly with no wires or debris caught underneath.
	Print head Adjustments incorrect.	Perform required adjustments.
	Print head Resistance not configured to proper value.	Reconfigure printhead resistance.

SYMPTOM	DIAGNOSIS	ACTION
Truncated print, no print, or feed button operates incorrectly while using non-continuous media.	Maximum label length parameter set less than the actual label length.	Set the correct label length.
	Printer, that is in rewind or peel-off mode, was powered on without media or backing around the rewind spindle.	Load media correctly for rewind or peel-off mode.
Long tracks of missing print on several labels.	Wrinkled ribbon.	See wrinkled ribbon in this table.
	Print element damaged.	Replace printhead.
Fine gray lines on blank labels at angles.	Wrinkled ribbon.	See Wrinkled Ribbon in this Table.
Wrinkled ribbon.	Ribbon fed through machine incorrectly.	Load ribbon correctly.
	Incorrect burn temperature.	Set the burn temperature to the lowest setting possible for good print quality.
	Incorrect printhead pressure or balance.	Set the pressure to the minimum needed. Refer to the printhead balance adjustment and printhead pressure adjustment procedures.
	Media not feeding properly; it is walking from side to side.	Make sure the media is snug by adjusting the media guide.
	Strip plate needs adjusting.	Perform adjustments.
	Ribbon supply spindle tension needs adjusting.	Perform adjustments.
	Print head needs realigning with platen roller.	Perform adjustments.
	Ribbon take-up spindle tension needs adjusting.	Perform adjustments.
	Three point mount for ribbon supply spindle needs adjusting.	Perform adjustments.
	Ribbon supply core slipping; spindle blades need adjusting.	Perform adjustments.
Light printing or no printing on the left or right side of the label.	Print head needs balancing.	Adjust balance. See printhead balance adjustment procedures.

SYMPTOM	DIAGNOSIS	ACTION
Mis-registration/skips labels.	Improper sensor type selected.	Perform media sensor adjustments.
	Misadjusted media sensors.	Perform spindle adjustments.
	Improper spindle tensions.	Correct ZPL format.
	Improper ZPL format.	Calibrate Printer.
Mis-registration and misprint of 1 to 3 labels.	Media was pulled when motor was not moving.	Open and close the print head, so it calibrates to find the label length.
	Printer, that is in rewind or peel off mode, was powered ON without media or backing around rewind spindle.	Load media correctly for rewind or peel-off mode.
	Misadjusted media sensor.	Place media sensor in proper position.
Vertical drift in top-of-form registration.	A plus or minus 1mm vertical drift is allowable due to the tolerances of the mechanical parts and printer modes.	Use top position setting to reposition the top-of-form.
		Calibrate if excessive.
Label jam in rear area of the printhead.	Upper media plate (snap plate) needs cleaning.	Clean upper media plate (snap plate).
Print label feeds out and then backfeeds immediately resting under the printhead.	Printer set for cutter mode with no cutter installed.	Set correct print mode.
Changes in parameter settings did not take effect.	Parameters are set incorrectly.	Cycle the power. Reload factory defaults. Then, set parameters and save permanently.
	If problem continues, there may be a problem on the main logic board.	Replace the main logic board.
Missing LCD characters or parts of characters.	LCD may need replacing.	Run the Power-On Self Test and check that LCD display is showing all characters.
ZPL was sent to printer, but not recognized. Buffer light remains ON or flashes.	Communications parameters are incorrect.	Print a communications diagnostic label. Check for format or overrun errors. Reset communication parameters.
	Prefix and delimiter characters set in printer do not match the ones used in ZPL.	Set the characters in the printer to match ZPL format. If problem continues, check the ZPL format for changed ^CC, ^CT, and ^CD.
	Zebra protocol is on.	Set protocol = none.

FACTORY ASSISTANCE

Should any problem be encountered which cannot be corrected with the aid of this manual, immediately contact your distributor or the Zebra Technical Support department to minimize downtime and/or assist in returning the equipment.

Returning Equipment

Should it become necessary to ship your *Xi*III-Series printer, carefully pack it in a suitable container to avoid damage during transit. A note describing the failure must be enclosed with the unit. Whenever possible, the original shipping container should be used. If the original shipping container is not available, a replacement can be ordered by contacting the Technical Support department. If other containers are used, a procedure similar to the original factory packaging should be followed.

Remove all media and ribbon from the printer. Enclose the unit in a protective, dust-proof bag and insure that the unit floats in an outer carton of shock absorbing material.

A Return Materials Authorization (RMA) number is required for all equipment being returned. Contact Zebra Technologies Corporation's Technical Support department to obtain an RMA number. Equipment returned for service without prior authorization may be refused.

CAUTION:

BEFORE PACKING THE PRINTER, REMOVE ANY RIBBON AND PAPER ROLLS FROM THE MEDIA COMPARTMENT. DO NOT PACKAGE THE PRINTER IN A RIGID CONTAINER WITHOUT UTILIZING SHOCK MOUNTS OR SHOCK-ABSORBING PACKING MATERIAL. A RIGID CONTAINER WILL ALLOW SHOCK ON THE OUTSIDE TO BE TRANSMITTED TO THE UNIT AND MAY CAUSE DAMAGE.

SECTION 4 MAINTENANCE

MAINTENANCE CONCEPTS

Maintenance for the Zebra *Xi*III-Series thermal transfer demand printer can be divided into two basic categories:

- This section of the manual contains preventive maintenance procedures and operator care instructions. These procedures may be performed by the operator as well as the service technician and should be performed on a regular basis. Preventive maintenance consists of a visual inspection and general cleaning of the interior and exterior of the printer. Preventive maintenance also includes cleaning the printhead and the associated media and ribbon paths.
- Corrective maintenance provides the service technician with detailed steps for resolving faults by adjustment or the replacement of components or modules.

Tools Required for Corrective Maintenance:

- Screwdriver, regular 1/4" flat-blade extended reach (10" shaft) (magnetic)
- Screwdriver, Phillips Head no. 1
- Screwdriver, Phillips Head no. 1, extended reach (10" shaft) (magnetic)
- Screwdriver, Phillips Head no. 2
- Nut driver, 1/4"
- Nut driver, 5/16"
- Long-nose pliers
- Set of inch combination (open end/box end) wrenches (must include a 7/16")
- Set of inch allen wrenches (1/16", 3/32", 5/64", 7/64", 9/64")
- Hex head driver, 3/32"
- Hex head driver, 7/64"
- Spring scale, 0 – 2250 g (part # HT344)
- Hex head driver, 7/64" extended reach (10" shaft) (part # HT368)
- Wire cutters
- Hex head driver, 7/64" extended reach (15" shaft) (part # 46482)
- Spindle torque adjustment kit (part # 01773)

Test Equipment Required

- Multi-meter and test leads
- Anti-static mat and anti-static wrist strap (for removing PC board)

PREVENTIVE MAINTENANCE

Cleaning the Zebra *Xi*III Printer

AREA	METHOD	INTERVAL
Printhead	Solvent	After every roll of media (or 500 feet of fanfold media) when printing in direct thermal mode and after every roll of ribbon when printing in the thermal transfer mode.
Platen roller	Solvent	
Transmissive Media Sensor	Air blow	
Reflective (black mark) sensor	Air blow	
Media path	Solvent	
Tear-off/peel-off bar	Solvent	As needed.
Snap plate	Solvent	As needed.
Label available sensor	Air blow	Monthly
Ribbon Sensor	Air blow	After every roll.
Ribbon feeding	Visual inspection	After every roll.
Belts	Visual inspection (Look for belt wear)	6 months or after every 500 rolls.
Media supply spindle	Formal preventive maintenance is not required. The spindle torque should be tested every year, or 500 rolls of media, for the media take-up and optional media supply spindles or every 200 rolls of ribbon for the ribbon supply and ribbon take-up spindles. The spindle torque need not be readjusted unless the printer is malfunctioning.	
Media take-up spindle		
Ribbon supply spindle		
Ribbon take-up spindle		
Cutter	Clean stationary cutter blade with solvent when it becomes gummed up with adhesive and cut debris. After cleaning, apply a small amount of grease to the moving cutter parts.	

Table 4-1 Recommended Preventive Maintenance Schedule

WARNING:

UNLESS INDICATED OTHERWISE, TURN PRINTER POWER OFF BEFORE PERFORMING MAINTENANCE PROCEDURES.

CAUTION:

USE ONLY THE CLEANING AGENTS DESCRIBED IN THE FOLLOWING PROCEDURES. ZEBRA TECHNOLOGIES WILL NOT BE RESPONSIBLE FOR ANY OTHER FLUIDS BEING USED ON THIS PRINTER.

EXTERIOR: The exterior surfaces of the *Xi*III-Series printer may be cleaned as required by using a lint-free cloth. DO NOT use solvents or harsh cleaning agents. If the unit is excessively dirty, a mild detergent solution or desktop cleaner may be used sparingly.

INTERIOR: As required, remove any dirt/lint accumulated in the interior of the printer using a soft bristle brush and/or vacuum cleaner. It is a good practice to inspect these areas after every fourth roll of media.

CLEANING SUPPLIES: When cleaning supplies are required, reorder the preventive maintenance kit (part # 01429).

WARNING:

THE USE OF CERTAIN LUBRICANTS SUCH AS PENETRATING OIL AND SILICONE OIL WILL DAMAGE THE PRINTER'S SPINDLES AND INHIBIT PROPER OPERATION. DO NOT LUBRICATE ANY PARTS IN THIS PRINTER UNLESS CALLED FOR IN THE INSTALLATION AND ADJUSTMENT PROCEDURES.

Cleaning The Printhead

Inconsistent print quality such as voids in the bar codes or graphics may indicate a dirty printhead. For optimum performance, the printhead should be cleaned regularly. Zebra Technologies Corporation recommends performing the cleaning procedure when installing a new roll of ribbon, when installing a new roll of direct thermal media or after having printed 500 feet of continuous or fanfold media.

It is not necessary to turn the printer power OFF prior to cleaning. If power is turned OFF, all label formats, images and parameter settings stored in the printer's formatting RAM memory will be lost. Permanent parameter settings stored in EEPROM will be retained. When power is turned back ON, it may be necessary to reload some items into the printer's memory.

Printhead Cleaning Procedure

1. Open the printhead by moving the printhead lever to the open position.
2. Remove the media and ribbon (if present).
3. Refer to Figure 4-1. Use a cleaning swab and wipe the print elements from end to end. (The print elements are the grayish/black strip just behind the chrome strip on the underside of the printhead.) Allow a few seconds for the solvent to evaporate.
4. Rotate the platen roller and clean thoroughly with a solvent and an applicator.
5. Brush or vacuum any accumulated paper lint and dust away from the rollers and the media and ribbon sensors.
6. Reload ribbon and/or media, close and latch the printhead, restore power (if necessary) and run the PAUSE Key Self Test to check print quality.

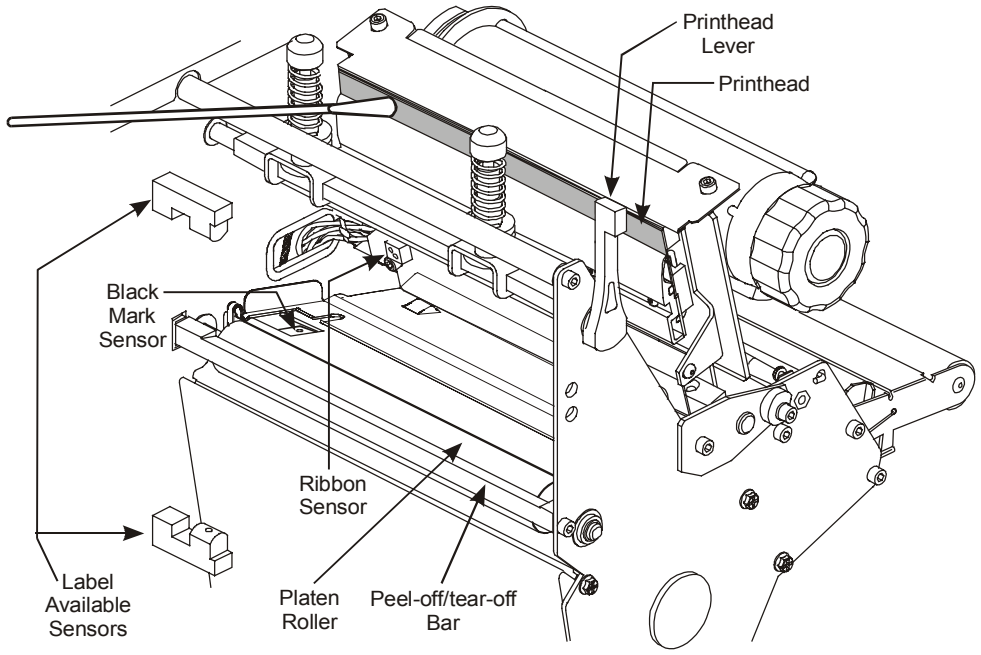


Figure 4-1 Cleaning a Typical Printhead

Cleaning the Upper Media Guide (Snap Plate): 140*Xi*III, 170*Xi*III, & 220*Xi*III.

Clean the snap plate to remove label adhesive or a label that has adhered to the underside of the snap plate.

1. Insert a small-blade screwdriver or similar tool into the loop on the left side of the snap plate. Lift the snap plate. See Figure 4-2.

CAUTION: Use care to not bend, twist, or otherwise deform the loops!

2. Repeat step one on the right side of the snap plate.
3. Remove the snap plate from the printer.
4. Clean the snap plate with cleaning solvent and a soft cloth.
5. To reinstall the snap plate, insert the two tabs on the bottom of the snap plate into the two slots of the media pathway. See Figure 4-2.
6. Slide the snap plate toward you.
7. Press down on the loops to lock the snap plate into place.

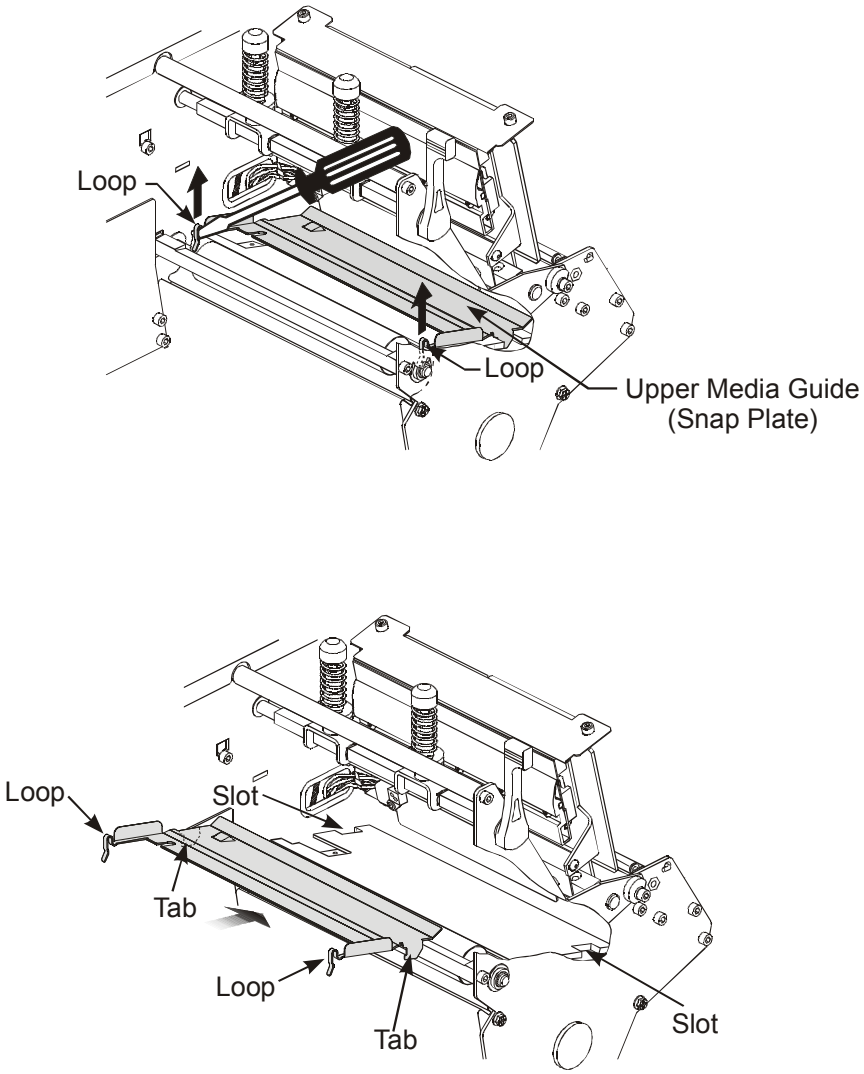


Figure 4-2 Removal and Installation of Snap Plate for 140/170/220*Xi*III

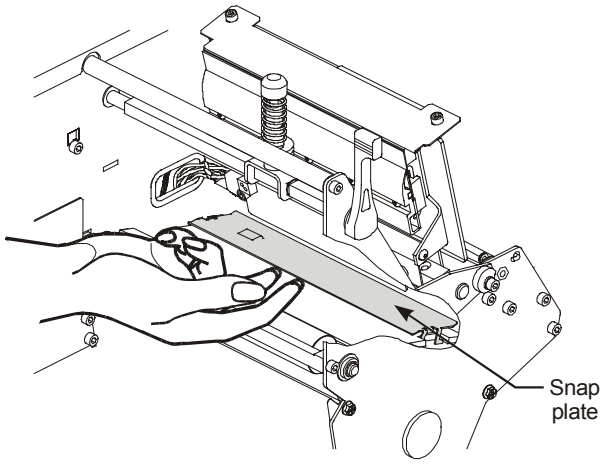
Cleaning the Upper Media Guide (Snap Plate): 90/96*Xi*III

Clean the snap plate to remove label adhesive or a label that has adhered to the underside of the snap plate.

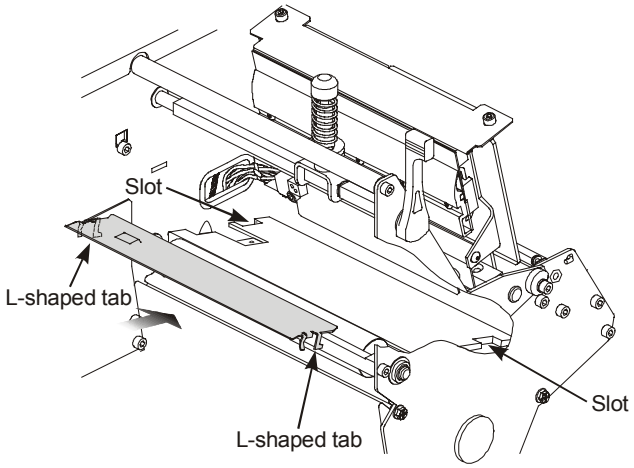
1. Lift the front edge of the snap plate.

CAUTION: Use care to not bend or twist.

2. Remove the snap plate from the printer. See Figure 4-3.
3. Clean the snap plate with cleaning solvent and a soft cloth.
4. To reinstall the snap plate, insert the two L-shaped tabs on the bottom of the snap plate into slots of the media pathway.
5. Slide the snap plate to the rear of the slots.
6. Press down on the snap plate to lock it into position.



Removal



Installation

Figure 4-3 Removal and Installation of Snap Plate for 90/96*Xi*III

CORRECTIVE MAINTENANCE

A preventive maintenance kit (# 01429) containing six cleaning swabs soaked in solvent (alcohol) is available from Zebra Technologies Corporation.

WARNING:

UNLESS INDICATED OTHERWISE, TURN PRINTER POWER OFF BEFORE PERFORMING MAINTENANCE PROCEDURES.

Configuration

After you have installed the media and ribbon and the POST (Power-On Self Test) is complete, the front panel display shows "PRINTER READY." You may now set printer parameters for your application using the front panel display and the five keys directly below it.

Refer to the Zebra *Xi*III-Series printer user's guide for further details on configuring the printer for your application.

If it becomes necessary to restore the initial printer defaults, see the "FEED Key and PAUSE Key Self Test" in the troubleshooting section (Section 3) of this manual.

Entering the Setup Mode

To enter the programming mode, press the SETUP/EXIT key. Press either the NEXT/SAVE key or PREVIOUS key to scroll to the parameter you wish to set. Throughout this process, press the NEXT/SAVE key to continue to the next parameter, or press the PREVIOUS key to go back to the previous parameter in the sequence.

Changing Password-Protected Parameters

Certain parameters are password-protected by factory default.

CAUTION:

DO NOT CHANGE PASSWORD-PROTECTED PARAMETERS UNLESS YOU'RE SURE YOU KNOW WHAT YOU'RE DOING! IF THEY ARE SET INCORRECTLY, THESE PARAMETERS COULD CAUSE THE PRINTER TO FUNCTION IN AN UNPREDICTABLE WAY.

The first attempt to change one of these parameters (pressing one of the BLACK OVAL keys) will require you to enter a four-digit password. This is done via the "ENTER PASSWORD" display. The left black oval key changes the selected digit position. The right BLACK OVAL key increases the selected digit value. After entering the password, press the NEXT/SAVE key. The parameter you are trying to change will be displayed. If the password was entered correctly, you can now change the value.

The default password value is 1234. The password can be changed using the ^KP (Define Password) ZPL II instruction.

NOTE: Once the password has been correctly entered, it need not be entered again unless you leave and re-enter the programming mode using the SETUP/EXIT key.

NOTE: You can disable the password protection feature so that it no longer prompts you for a password by setting the password to ØØØØ via the ^KPØ ZPL/ZPL II command. To re-enable the password-protection feature, send the ZPL/ZPL II command ^KPx, where "x" can be any number, 1-4 digits in length, except Ø.

Leaving the Setup Mode

You can leave the setup mode at any time by pressing the SETUP/EXIT key. The SAVE CHANGES display will appear. There are five choices, described below. Press the left or right black oval key to display the sequence of choices. When your choice is displayed on the LCD, press the NEXT/SAVE key to save settings.

PERMANENT: saves the current settings. Values are stored in the printer even when power is turned OFF.

TEMPORARY: saves the current settings until changed again or until power is turned OFF.

CANCEL: cancels all setting changes made since entering the programming mode except the darkness and tear-off settings (if they were changed).

LOAD DEFAULTS: loads factory default settings. Refer to the user's guide for default values.

NOTE: If you load factory default settings, you will have to perform a media and ribbon sensor calibration.

LOAD LAST SAVE: reloads the settings made during the last permanent save.

CALIBRATION

Two types of calibrations can be performed by the printer:

1) **Standard Calibration**: Pressing the CALIBRATE key causes the printer to feed media and ribbon and set the values it detects. This includes media, media backing material (the spaces between labels), media out, and ribbon in/out status (which determines the print mode—thermal direct or thermal transfer). This form of calibration also occurs as part of the "Sensor Profile" and "Media and Ribbon Calibration" procedures described on next page.
2) **Media and Ribbon Sensor Sensitivity Calibration** (using non-continuous media): Performing the "Media and Ribbon Calibration" procedure, on the next page, first resets the sensitivity of the sensors to better detect the media and ribbon you are using. With the sensors at their new sensitivity levels, the printer then performs the standard calibration described above. Changing the type of ribbon and/or media may require this calibration process to reset the sensitivity of the media and ribbon sensors. Indications that the sensitivity may need to be reset would be a "CHECK RIBBON" light ON with the ribbon properly installed or non-continuous media being treated as continuous media.

Media and Ribbon Sensor Sensitivity Calibration

NOTE: Before you begin this procedure, make sure that the "Maximum Length" is set to a value equal to or greater than the length of the labels you are using. If the maximum length is set to a lower value, the calibration process will assume that continuous media is in the printer.

Sensor Profile

1. Press the SETUP/E*XI*T key to enter the programming mode.
2. Press the NEXT/SAVE key multiple times until the printer's LCD displays:

SENSOR PROFILE

3. Press the RIGHT OVAL key to initiate the standard calibration procedure and print a media sensor profile. (See Figure 4-4 for a media and ribbon sensor profile sample printout.)

The media sensor profile may be used to troubleshoot registration problems that may be caused when the media sensor detects preprinted areas on the media or experiences difficulty in determining web location. If the media and/or ribbon sensors sensitivity needs to be adjusted, press the NEXT/SAVE key to access the media and ribbon calibrate procedure below.

Media and Ribbon Calibration

NOTE: The following procedure is used to adjust the sensitivity of the media and ribbon sensors. It must be followed exactly as presented. All steps must be performed even if only one of the sensors requires adjustment.

1. Press the NEXT/SAVE key to skip this procedure.

   or

   Press the RIGHT OVAL key to start the calibration procedure. The front panel LCD should show:

LOAD BACKING CANCEL CONTINUE

2. Press the LEFT OVAL key to cancel the operation, or open the printhead and remove as many labels as needed to load a section of blank backing material under the media sensor. (If you are unsure of the media sensor location, refer to Figure 4-9 and 4-10.)

3. Press the right oval key to continue. The front panel LCD should show:

REMOVE RIBBON CANCEL

4. Press the left oval key to cancel the operation.

   or

   Remove the ribbon (sliding it as far to the right as possible will have the same effect as removing it), and close the Printhead.

5. Press the right oval key to continue. The front panel LCD should show:

CALIBRATING PLEASE WAIT

6. The printer automatically adjusts the base settings as determined by the media and ribbon sensors due to the specific media and ribbon combination you are using. On the sensor profile: this corresponds to moving the graph up or down to optimize the readings for your application.

When this part of the calibration process is completed, the front panel LCD should show:

RELOAD ALL
CONTINUE

7. Open the printhead and pull the media forward until a label is positioned under the media sensor.
8. Move the ribbon back to its proper position.
9. Close the printhead.
10. Press the right oval key to continue. The printer performs the second part of the calibration process and the front panel LCD should show:

MEDIA AND RIBBON
CALIBRATE

This part of the calibration is equivalent to pressing the CALIBRATE key on the printer's front panel. The media sensor determines a new value based on the presence of media and backing and determines the label length. The ribbon sensor determines a new value based on the presence of ribbon and puts the printer in either thermal direct or thermal transfer mode.

Once media stops feeding, the calibration process is complete!

11. To see the new settings, press PREVIOUS and print a sensor profile.
12. Press the SETUP/EXIT key to leave the programming mode. When asked to SAVE CHANGES, select "Permanent".

Sensor Sensitivity

The detailed information that follows amplifies the "Media and Ribbon Sensor Calibration" description just performed.

- The procedure prompts the user to load just the liner (backing material) in the media sensor path and removes the ribbon from the ribbon sensor area.
- This step prepares the printer to automatically adjust the gain of the media amplifier to produce a 3 Volt output while sensing just the liner.
- This step also prepares the printer to adjust the gain of the ribbon amplifier to produce a 2 volt output while no ribbon is in the path.

Sensing Typical Thermal Transfer Non-Continuous Die Cut Labels.

Once the user has loaded backing and removed the ribbon, continuing the process adjusts the gain of the sensor amplifiers. The results of this process are subsequently indicated on the printer configuration label as:

Media LED.....Duty cycle applied to the media amplifier to achieve the 3 volt output while viewing backing material only.

Ribbon LED ...Duty cycle applied to the ribbon amplifier to achieve the 2 volt output while viewing only the reflector (ribbon out condition).

Reinstalling the ribbon and media and continuing the process (media is feeding) automatically adjusts the remaining values needed to function properly. These values are determined as follows:

The **Max Label Length** setting is read and the printer begins feeding labels to determine the web sensor value. This value is indicated on the printer configuration label as:

Web Sensor... the voltage level distinguishing "backing only" from "label plus backing", specified as a percentage of 5 volts.

Media Sensor...the "Paper Out" value equal to a certain percentage of 5 volts. This is programmed to be at 75% (5 volts x 75% = 3.75 volts).

The **Ribbon Sensor** value is calculated. This value is indicated on the printer configuration label as:

Ribbon Sensor ... determined by taking 75% of the minimum "ribbon in" calculation. This is displayed as a percentage of 5 volts.

The **Label Length** is now measured by feeding one label. This value is indicated on the Printer Configuration Label as:

Label Length....the distance (in dot rows) between the rising edge of consecutive peaks (as it crosses the web value) minus 2 millimeters.

Media Sensor Profile

The media sensor profile is a graphical representation of the calculated sensor values. The limitations associated with successfully printing the profile are that the label stock must be wide enough and long enough to allow the whole display to be viewed. An incorrect label length may inadvertently allow the peaks to print in the interlabel gap.

The following profile represents these sensor values for a typical 1-1/2" 6A label stock with 5319 ribbon used in a 140*Xi*III.

50.....Web Sensor

75.....Media Sensor

64.....Ribbon Sensor

19.....Media LED

24.....Ribbon LED

304.....Label Length

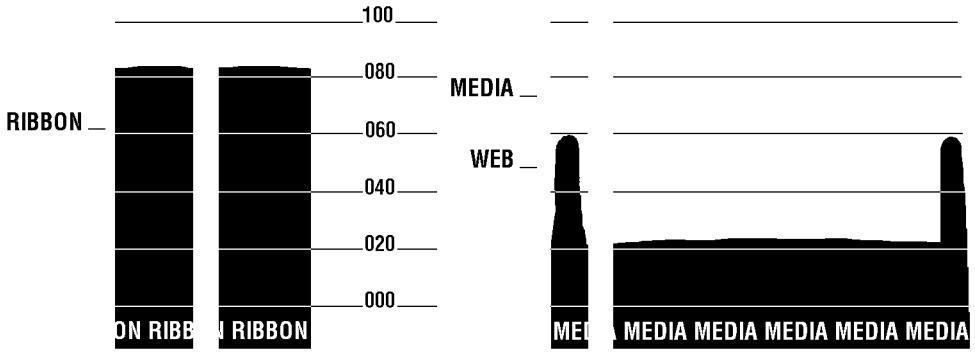


Figure 4-4 Typical Media Sensor Profile

NOTE: A Paper Out condition will occur during normal printing functions, if the sensed level is above 75% (3.75 volts) for 1/2" of media movement. However, if the sensed value is above 75%, after recovering from an error condition (i.e. Head Open, Paper Out, Ribbon Out), the printer will indicate PAPER OUT immediately. Thus, there is no attempt to feed a label any distance until the sensed value is below the media sensor value.

Sensing Continuous Media

Continuous media does not present a web to the media sensors. When monitored, the web sensor value will be less than the media sensor value. The printer then automatically reconfigures the media type to "Continuous".

Sensing Tag Stock with a Notch

The media sensors can be calibrated using no backing, however this may allow one label length to feed during a paper out condition as if a label were missing from the liner. This may occur if the adjusted level of the media LED allows a no backing condition to achieve 3 volts. A better method of calibration is to use a strip of standard label liner to adjust the sensor sensitivity. The only drawback to this method is that a "Paper Out" condition will result if the hole or notch is present at the media sensor (web value exceeds the media sensor value) after an error condition. See the previous **"NOTE"** regarding a paper out condition.

Direct Thermal Printing

During the ribbon LED adjustment, if there is no ribbon in the printer, no difference in the "Ribbon In" and "Ribbon Out" values are detected. During direct thermal printing, the printer continues to monitor the ribbon sensor input and will generate a "Ribbon In" error and stop printing if the ribbon sensor value increases during the printing process.

STANDARD KST PRINTHEAD REPLACEMENT

Refer to Figure 4-5 while performing the following procedure.

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. THE TECHNICIAN MUST WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS WHEN REMOVING AND REPLACING THE PRINTHEAD.

1. Turn the printer OFF and remove the power cord.
2. Open the printhead assembly and remove the media and ribbon; then close the printhead assembly.
3. Properly connect yourself to an anti-static protection system.
4. Locate the spring-loaded mounting screw on top of the printhead assembly.
5. Loosen the mounting screw until it disengages from the printhead.

CAUTION:

USE CARE TO MINIMIZE ANY PHYSICAL DAMAGE TO THE PRINTHEAD DURING THE REMAINDER OF THIS PROCEDURE.

6. Slowly open the printhead assembly. The printhead will be resting on the platen while the rest of the assembly pivots back out of the way.
7. Spread apart the holding tabs on the sides of the printhead data connector to release the data cables.
8. Grasp the outside edges of the printhead power cable connector and press down on the power cable locking tab.
9. While maintaining pressure on the locking tab, disconnect the printhead power cable and remove the printhead through the front of the printer.
10. Prior to installing the new printhead, note the resistance value located on the right side of the new printhead label. See Figure 4-5.
11. Connect the printhead power cable to the appropriate connector.
12. Spread apart the holding tab on the top of the data connector (two data connectors on the 220*Xi*III) and press the appropriate printhead data cable into each connector. The holding tabs must “snap” into place around the cable connectors.
13. Carefully position the alignment slots in the new printhead over the alignment posts on the underside of the mounting bracket.

14. Once the printhead is seated properly, carefully tighten the mounting screw to a value of 5-6 inch/pounds. (Make sure the screw is properly aligned before tightening.)
15. Refer to Figure 4-1. Use a cleaning swab to thoroughly clean the print element (gray area) of the new printhead.
16. Reinstall media and ribbon.
17. Connect the AC power cord and turn the printer power ON.
18. After the POST, enter the configuration mode, enter the new printhead resistance value, then permanently save the configuration.
19. Turn the printer OFF, then perform the PAUSE Key Self Test and check print quality.
20. The printer should be ready for operation. If problems arise, refer to the troubleshooting section.

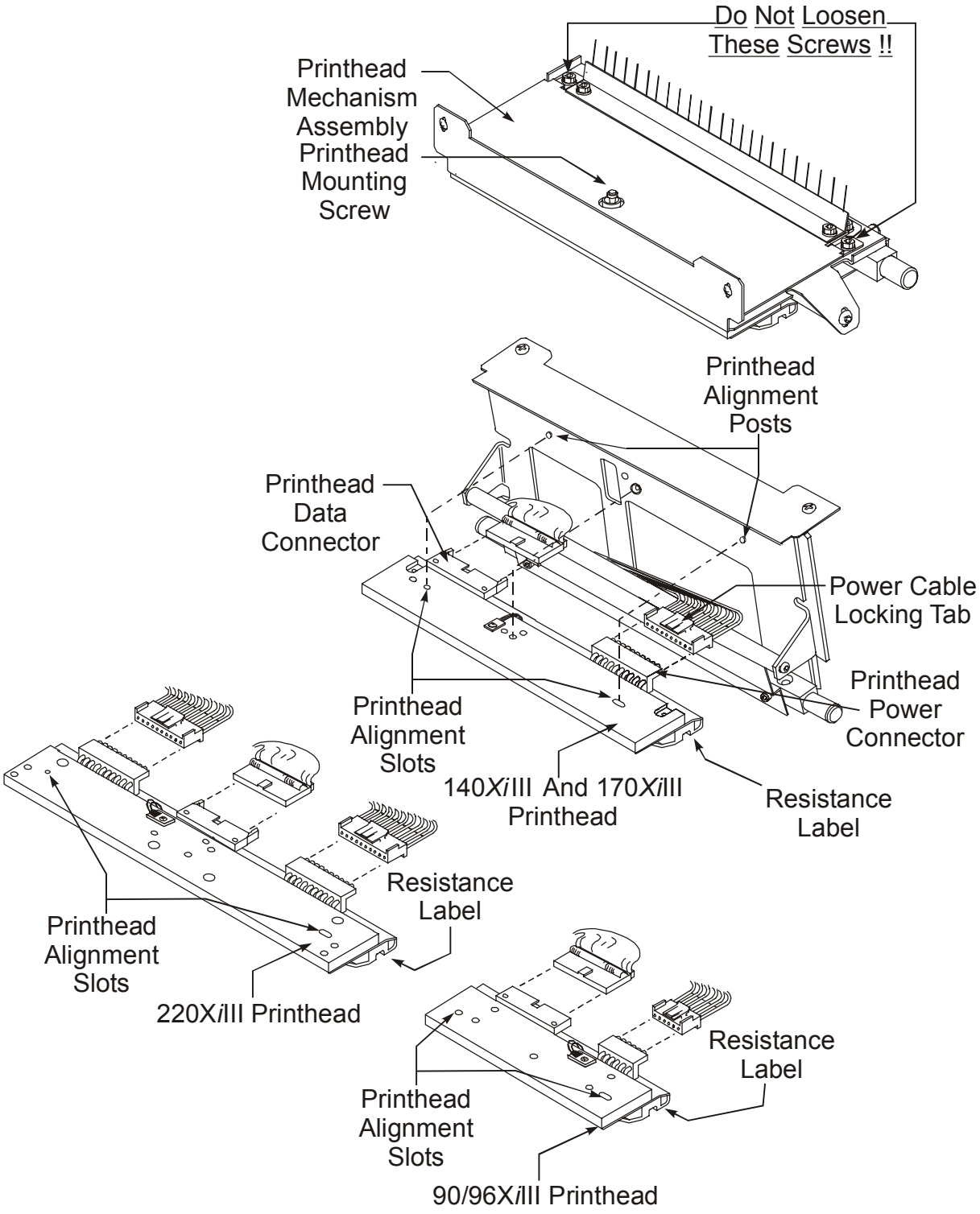


Figure 4-5 Printhead Replacement

PRINTHEAD ADJUSTMENTS

Print Quality Adjustments

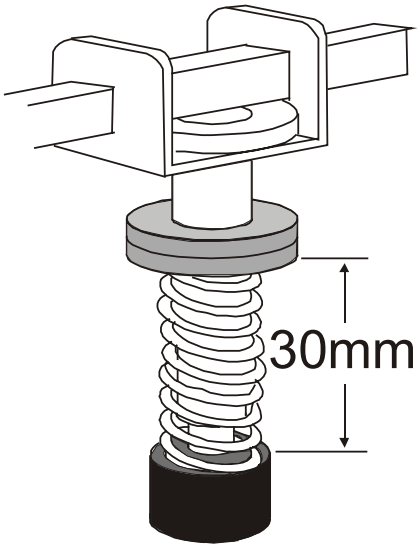
Five interrelated adjustments lead to optimum print quality with increased printhead life:

- Printhead Parallelism
- Wear Plate (Balance) Position
- Printhead Position
- Printhead Pressure
- Strip Plate Positioning

To achieve optimum results with print quality adjustments, install full width media and ribbon.

NOTE: Verify the media and ribbon are properly matched and darkness/print speed configurations are correct for the application before performing any mechanical adjustments.

Prior to Performing Printhead Adjustments



1. Position the toggle(s) as follows:

   (90/96*Xi*III) position the toggle in the center of the upper print mechanism.

   (140*Xi*III, 170*Xi*III and 220*Xi*III) reference the printhead mounting screw as the center of two halves of the print mechanism, and position each toggle at the center of each half.
2. Compress the toggle spring by turning the lower knurled nut clockwise until the distance from the top of the toggle foot to the bottom of the lower knurled nut equals 30mm.
3. Perform the PAUSE Key Self Test by pressing the PAUSE key while turning the printer power ON.

NOTE: The order in which the adjustments are performed depends on the print quality of the labels printed during the PAUSE Test.

The first two printhead adjustments (Parallelism and Wear Plate) must be completed prior to attempting to locate the optimum print position. As with the other adjustments, parallelism and wear plate adjustments are interrelated. Adjusting one may have an effect on the position of the other.

Excessive toggle pressure will lead to an increased printhead wear and decreased printhead life.

Increased printhead life is possible by combining minimum toggle pressure and optimum printhead position over the platen roller

Printhead Parallelism Adjustment

This adjustment is performed in conjunction with the wear plate position, printhead position, and printhead pressure adjustments.

Adjusting the printhead parallelism squares the printhead in reference to the media.

Printhead Parallelism Test

1. Prior to starting this test, insure the installed media is “squared” with the tear-off Bar.
2. When the printer begins printing PAUSE Key Self Test labels, refer to the user's guide and adjust the darkness for a clear presentation of all lines on the test label.
3. The uppermost line on the test label should be parallel to the top edge of the label, within a tolerance of 0.020”.
4. If the print lines are not parallel with the top of the label, proceed to the printhead parallelism adjustment. If parallelism is within tolerance, proceed to the wear plate position adjustment.

Printhead Parallelism Adjustment

Refer to Figure 4-6 during this procedure.

1. Using a 7/64" allen wrench or 7/64" hex driver, loosen the four allen screws at the top rear of the print mechanism.
2. Adjust the parallel location of the uppermost lines by turning one of the two flat head screws located at the back of the print mechanism.

NOTE: Only small adjustments should be required.

3. To move the printhead forward, turn the adjustment screw clockwise as viewed from the rear of the printer.
4. To move the printhead backward, turn the adjustment screw counter-clockwise as viewed from the rear of the printer.
5. Adjust each side as necessary to align the uppermost line of the test label parallel with the top edge of the label.
6. To check the results of your adjustments, run additional PAUSE Key Self Test labels and check for proper parallelism.
7. Tighten the four top Allen screws and run more PAUSE Key Self Test labels to verify proper positioning.

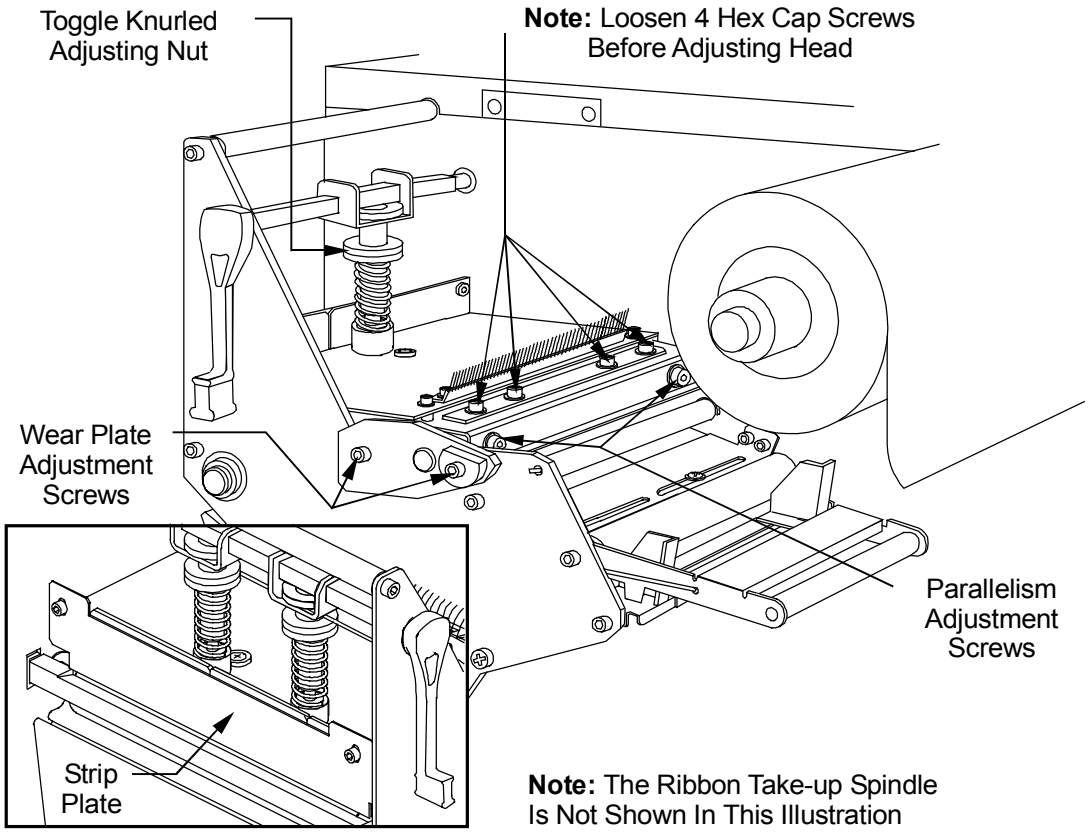

Toggle Knurled Adjusting Nut
Note: Loosen 4 Hex Cap Screws Before Adjusting Head
Wear Plate Adjustment Screws
Parallelism Adjustment Screws
Strip Plate
Note: The Ribbon Take-up Spindle Is Not Shown In This Illustration

Figure 4-6 Printhead Adjustment Illustration

Wear Plate Position Adjustment

This adjustment is performed in conjunction with the printhead parallelism, printhead position and printhead pressure adjustments.

Adjusting the wear plate position produces even pressure across the full width of the printhead and platen roller.

Refer to Figure 4-6 for the location of the adjustment screws used in the following procedure.

1. Using a # 1 phillips head screwdriver, loosen the 2 screws on the front of the strip plate.
2. Activate the PAUSE Key Self Test by pressing the PAUSE key while turning the printer power ON.
3. After printing a few labels, PAUSE the printer and reduce the DARKNESS value until the test labels are a charcoal gray color.
4. Print additional PAUSE Key Self Test labels and observe the print quality.
5. If lighter or no printing is observed on one side of the label as compared with the other, continue with this adjustment. (This assumes the toggle pressure has been properly balanced.)
6. Using a 7/64 allen wrench, slightly loosen the 2 allen screws mounted on the wear plate.
7. Continue to print PAUSE test labels while adjusting the wear plate eccentric for even printing.

8. Adjust the wear plate eccentric by turning it by hand or with a 7/16 open end wrench or with a pair of utility pliers.
9. Adjust the wear plate eccentric clockwise to increase pressure on the main frame side of the label or adjust it counter-clockwise to increase pressure on the outboard side of the printer.
10. When even print quality is achieved, hold the wear plate in position and tighten the 2 wear plate screws.
11. Continue to print PAUSE test labels and verify parallelism is correct.
12. If parallelism is out of tolerance, perform the printhead parallelism adjustment.
13. If no other adjustment is required, align the strip plate and tighten the 2 phillips head screws.

Printhead Position Adjustment

This adjustment is performed in conjunction with the printhead parallelism, wear plate position, and printhead pressure adjustments.

Adjusting the printhead position aligns the head for optimum print quality.

Refer to Figure 4-6 for location of adjustment screws used in the following procedure.

1. The thermal elements of the printhead should be aligned just behind the crest of the platen roller.
2. Print test labels using the PAUSE Key Self Test.
3. Set the darkness to achieve as close to optimum print quality as possible.
4. Using a 7/64" allen wrench, loosen the four allen screws at the top rear of the print mechanism.

CAUTION:

IN STEP 5, TO PREVENT PRINTHEAD DAMAGE, LOOSEN THE FOUR TOP SCREWS BEFORE TURNING THE TWO REAR ADJUSTMENT SCREWS.

5. Adjust the printhead position for optimum print quality by equally turning the two screws located at the back of the print mechanism. **Adjustments are made in very small increments.** Turn both screws one-eighth turn clockwise and observe the changes in print quality. Turn both screws 1/8 turn counter-clockwise and observe the changes in print quality. (Due to spring pressure, there may be a dead spot in the actual printhead movement when switching adjustments from one direction to the other.)
6. Enter the configuration mode and decrease the darkness until the PAUSE test labels are a charcoal gray color.
7. Carefully look at the PAUSE test labels for streaks, flowering, and other print quality problems.
8. If required, adjust the hex-head screws and observe if print quality problems are corrected.
9. Enter the configuration mode and increase the darkness until the PAUSE test labels are printed at optimum resolution and contrast.
10. Since printhead parallelism, wear plate position and printhead positions are interrelated, carefully look at the test labels for changes in these settings and adjust if necessary.

Printhead Pressure Adjustment

Printhead pressure is the fourth of the four interrelated adjustments. Using lower printhead pressure and darkness settings can extend printhead life. If printing is too light on one side, or if thick media is used, printhead pressure may require adjustment.

Refer to Figure 4-7 for the location of the pressure toggles. The 90/96*Xi*III printers use only one toggle that should be positioned over the center of the media width. The 140*Xi*III, 170*Xi*III, and 220*Xi*III printers have two toggles. These toggles are typically positioned at the 1/4 and 3/4 positions across the width of the media. If the media is sufficiently narrow that both toggles will not fit within its edges, the inside toggle should be centered above the media and the outside toggle should be reduced to a minimum.

1. Print PAUSE Key Self Test labels to check print quality.
2. To increase printhead pressure, loosen the upper knurled nut on the toggle and adjust the lower toggle adjusting nut downwards.
3. To decrease printhead pressure, loosen the upper knurled nut and adjust the lower toggle adjusting nut upwards.
4. Adjust printhead pressure for optimum print quality.
5. To lock the toggle pressure, tighten the upper knurled nut against the lower toggle adjusting nut.
6. Though different media and ribbon combinations may require different toggle settings, a suggested initial distance between the top of the toggle foot to the bottom of the lower knurled nut equals 30mm. See page 4-17.
7. Enter the configuration mode and set the darkness to the optimum level for the installed media.

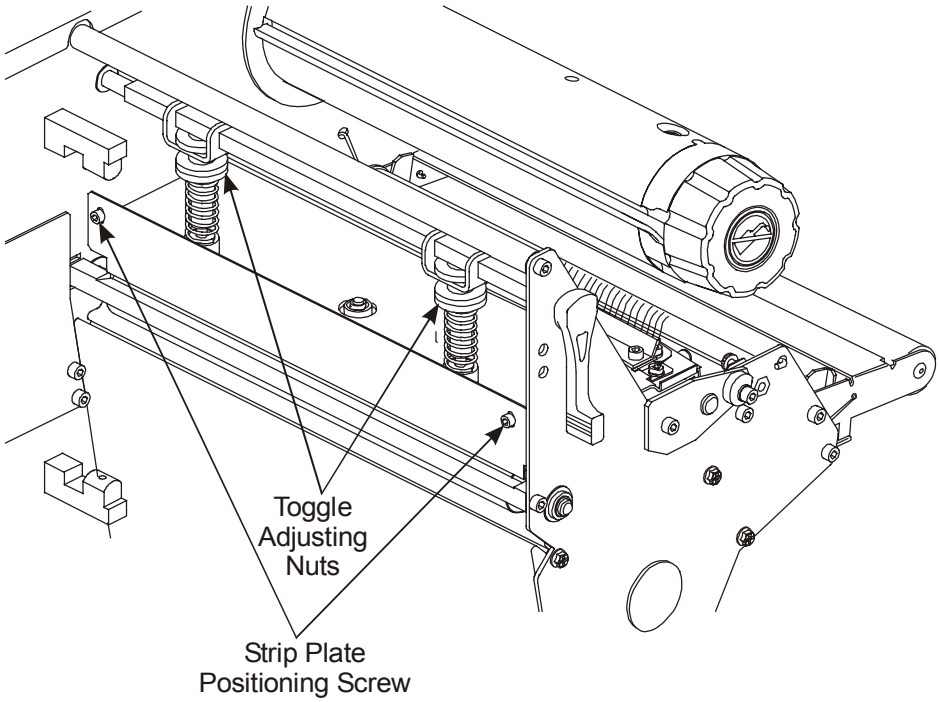


Figure 4-7 Printhead Pressure Adjustment

Strip Plate Adjustment

The strip plate adjustment is a very important part of the printhead adjustment procedure.

The strip plate can be adjusted for proper tracking and separation of the ribbon from the media after printing. Refer to Figure 4-7.

1. Print PAUSE Key Self Test labels.
2. Press the PAUSE key and, after the printer pauses, observe the ribbon for possible problems such as wrinkling.
3. Loosen the two phillips head screws holding the strip plate to the front of the printhead assembly.
4. While running the PAUSE Key Self Test, lower the strip plate so that the ribbon is flat, smooth and tracks properly when fed to the ribbon take-up spindle.
5. Tighten the strip plate phillips head screws and print a minimum of 25 labels while checking for ribbon wrinkle, tracking and media/ribbon separation problems. (If ribbon problems persist, check the torque settings of the ribbon supply spindle and adjust tension if required.)

Darkness Adjustment

Due to differences in types of media/ribbon and wear on thermal printhead elements, it may be necessary to adjust the darkness setting (burn temperature) of the *Xi*III printhead to achieve proper printing. This adjustment is accomplished by using the LCD display and the membrane keys.

NOTE: Turning the printer OFF is not required for the new setting to take effect.

To adjust the darkness, follow the procedure below:

CAUTION:

SET THE DARKNESS TO THE LOWEST SETTING POSSIBLE FOR THE DESIRED PRINT QUALITY. DARKNESS SET TOO HIGH FOR A GIVEN RIBBON MAY CAUSE INK SMEARING, RIBBON WRINKLE AND/OR BURNING THROUGH OF THE RIBBON, AS WELL AS REDUCED PRINTHEAD LIFE.

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1. Begin printing a batch of labels. Refer to Section 3 and use the PAUSE key and CANCEL key self test label or, preferably, one of your own formats.
2. (Refer to the printer configuration discussion in the User Guide.) Using the front panel display and the membrane keys, adjust the darkness setting to obtain the desired print quality. Decreasing the value in the display causes a lighter (less black) image. Increasing the value causes a darker (blacker) image.

Media Tear-Off Position Adjustment

Refer to Figure 4-8. This adjustment sets the rest position of the media over the tear bar after printing. To achieve the desired tear-off position, refer to the user's guide. Power need not be turned OFF to set this parameter.

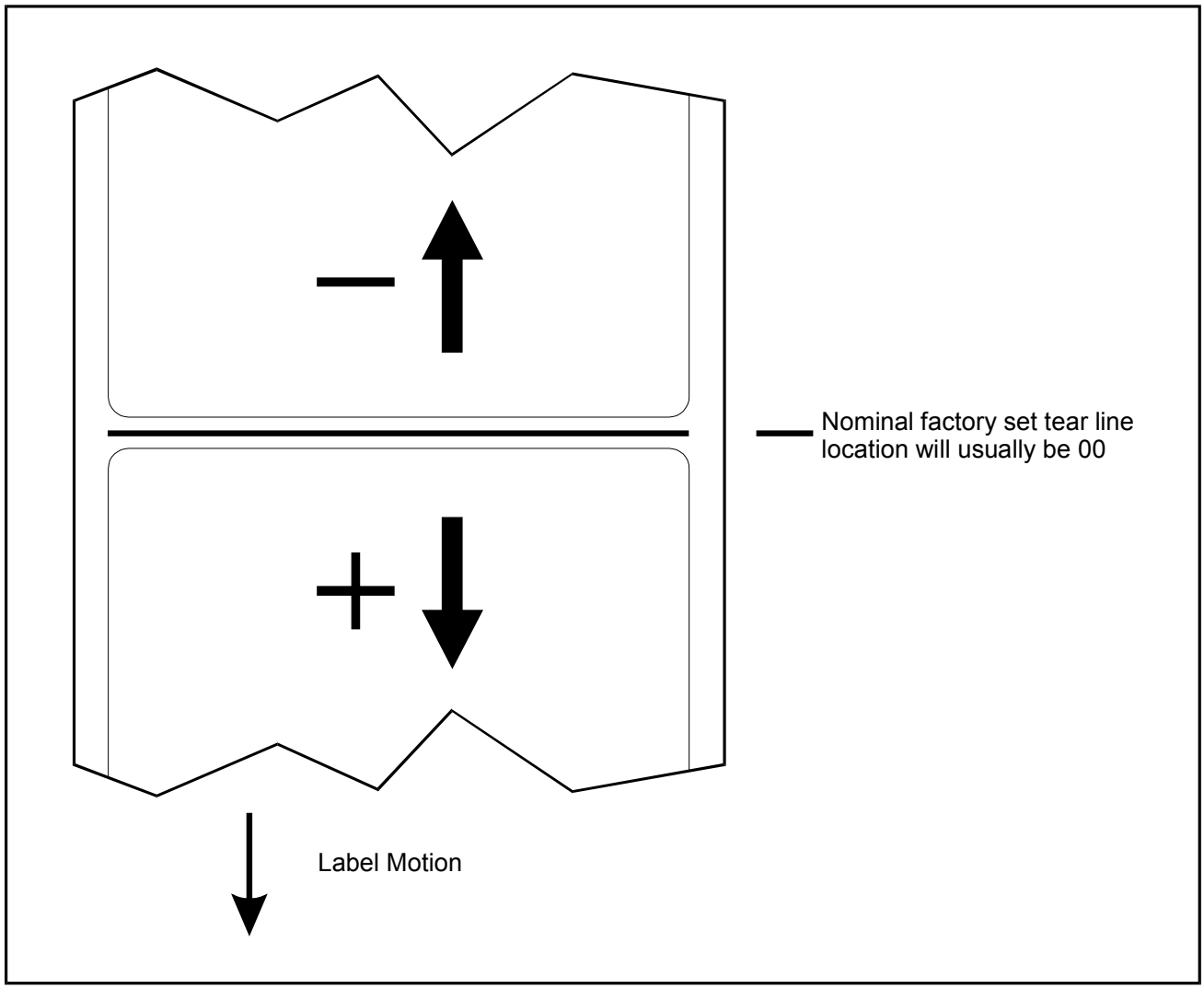


Figure 4-8 Tear-Off Position Adjustment

This illustration shows higher values move the label further out from the printer (moves the tear line closer to the leading edge of the next label). While lower values move the label into the printer (moves the tear line closer to the edge of the printed label).

TRANSMISSIVE MEDIA SENSOR POSITION ADJUSTMENT

The transmissive media sensor senses either the "web" between labels or a hole or notch in the print media to determine the length of the label or ticket.

The factory-set position should be sufficient for any width label when using media with a web, so little or no repositioning should be required. If it does become necessary to reposition the transmissive media sensor, refer to Figures 4-9 and 4-10 and perform the upper media sensor adjustment followed by the lower media sensor adjustment.

To adjust the upper media sensor for the inside half of the media width, follow these steps:

1. Remove the ribbon and locate the upper media sensor.
2. (90*Xi*III/96*Xi*III/140*Xi*III/170*Xi*III) carefully loosen the phillips head screw located at the top of the sensor.

   (220*Xi*III) **DO NOT** loosen the phillips head screw.
3. Slide the upper sensor along the slot to the desired position.

NOTE: When using label stock that has a web between labels, position the upper media sensor anywhere along the web, except where the rounded corners of the label are detected. When using tag stock, position the upper sensor directly over the hole or notch.

4. Tighten the phillips head screw.

To adjust the upper media sensor for the outside half of the media width, follow these steps:

1. Remove the ribbon and locate the upper sensor.
2. Remove the phillips head screw. This releases the upper sensor and the sensor wire cover.
3. Lift the upper media sensor assembly and move the sensor and the wire cover to the outside half of the mounting bracket. Carefully pull the wires through the tie wrap. You may need to set aside the sensor wire cover if the adjustment is far to the outside.
4. Replace and tighten the phillips head screw.

To adjust the lower media sensor, follow these steps:

1. Locate the lower media sensor assembly (a spring clip holding a circuit board) under the rear idler roller.
2. Position the sensor by sliding it in its slot, so that the two brass colored infrared emitters are centered under the upper sensor.
3. Gently pull wires out as required. (Wires should have a little slack.)

NOTE: If the sensor is being moved inward and a large loop of wire results, remove the cover from the electronics side of the printer and gently pull the wires through. It is important that the wires be properly clamped so that they do not rub any drive belts.

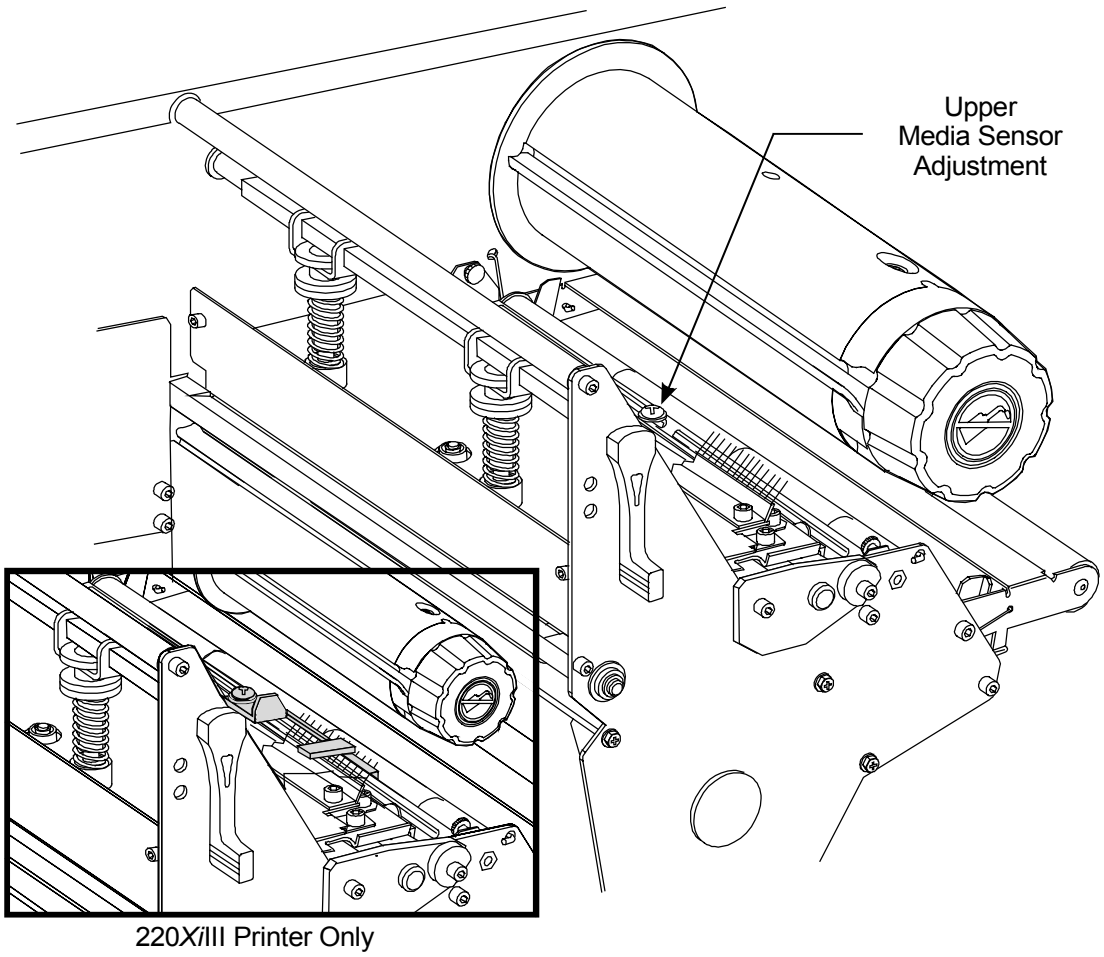


Figure 4-9 Upper Media Sensor Position Adjustment

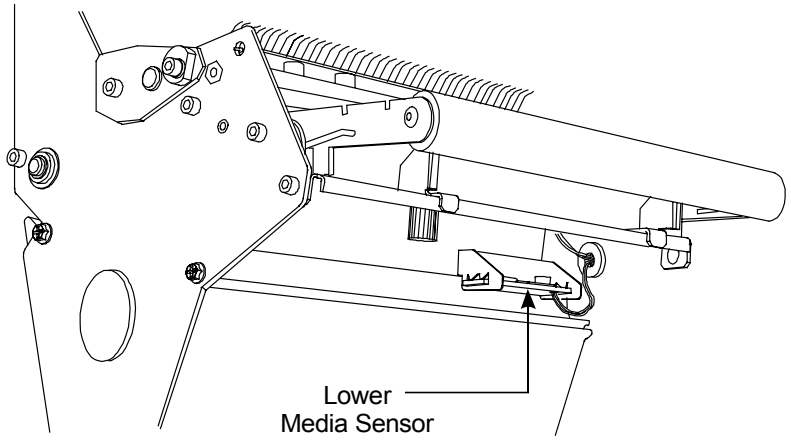


Figure 4-10 Lower Media Sensor Position Adjustment

Reflective Media Sensor Adjustment

The reflective media sensor is placed into operation for those applications where the sensing of black marks on the underside of the media is desired. For the *Xi*III-Series printers, the position of the reflective media sensor is fixed against the mainframe and has no adjustment. Refer to the printer user's guide to configure the printer for operation with either the reflective media sensor or the transmissive media sensor previously discussed.

LCD Viewing Adjustment

The brightness of the liquid crystal display (LCD) may be adjusted for optimal viewing. Refer to the LCD ADJUST configuration parameter in the printer's user's guide.

Take Label Sensor Alignment

The take label (label available) sensor activates only when the Zebra *Xi*III is set to peel-off mode. This mode requires the media rewind spindle option. The media sensor pair is **NOT** installed on Zebra *Xi*III printers without this option.

Refer to Figure 4-11 for the location of the take label sensor components. When the beam is broken, the *Xi*III-Series printer will be inhibited from printing or feeding (in peel-off mode only). It may, however, accept additional label formats if the buffer is not full. There is no sensitivity adjustment for the take label sensor. If you encounter problems, make certain the *Xi*III printer is set to peel-off mode and the sensors are aligned. Sensors are aligned at the factory or when the media rewind spindle option is installed. No adjustments are required after installation.

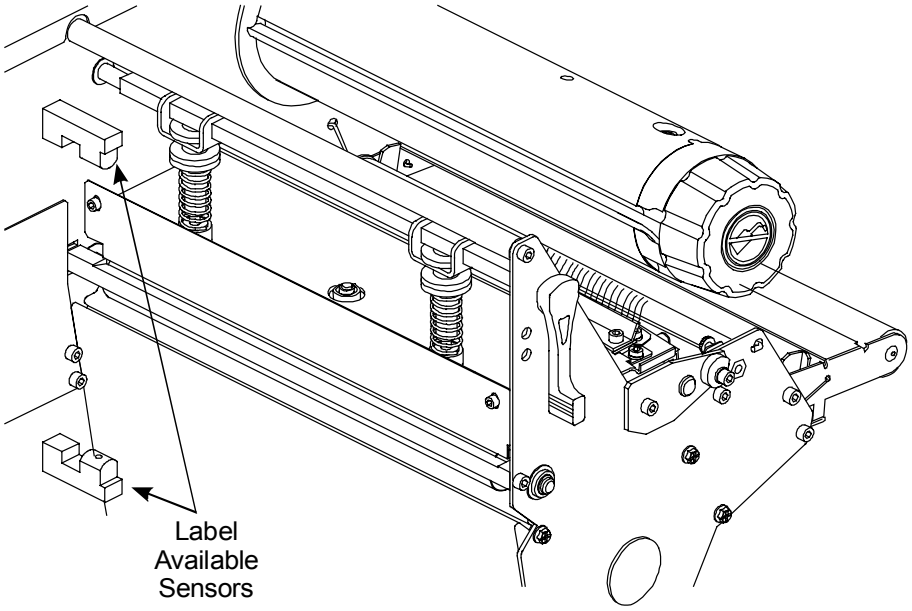


Figure 4-11 Take Label (Label Available) Sensor Location

MEDIA TRACKING ADJUSTMENTS

Rewind Mode

If the media walks from side to side, tears, or wrinkles against the media rewind tracking plate, it will be necessary to adjust the rewind plate assembly. Refer to Figures 4-12 and 4-13.

1. Remove the rewind plate assembly and loosen the 5/16 hex nuts, which attach the hook plate to the rewind plate. Moving the outer end of the hook plate up will force the media towards the rewind tracking plate while moving this end down will move the media away from the tracking plate. (The opposite effect will occur if the same adjustments are performed on the inner end of the hook plate.)
2. Reinstall the rewind plate assembly and print a number of test labels. If problems persist, readjust the hook plate.
3. If the media cannot be made to track correctly with this adjustment, check the distance from the outside of the tracking plate to the main frame. This dimension is set at the factory and should be 0.547 (13.9 mm) to 0.567 (14.4 mm). If the distance needs to be reset, refer to Figure 4-13 and proceed to step 4 below.
4. Use a 1/16 hex allen wrench to loosen the two set screws in the collar located inside the rewind spindle assembly. The screws are accessible through a single hole in the spindle assembly, as shown in Figure 4-13. Reposition the spindle assembly closer to or farther from the main frame as required, and retighten the two collar set screws.
5. Perform steps 1 and 2 until required results are achieved.

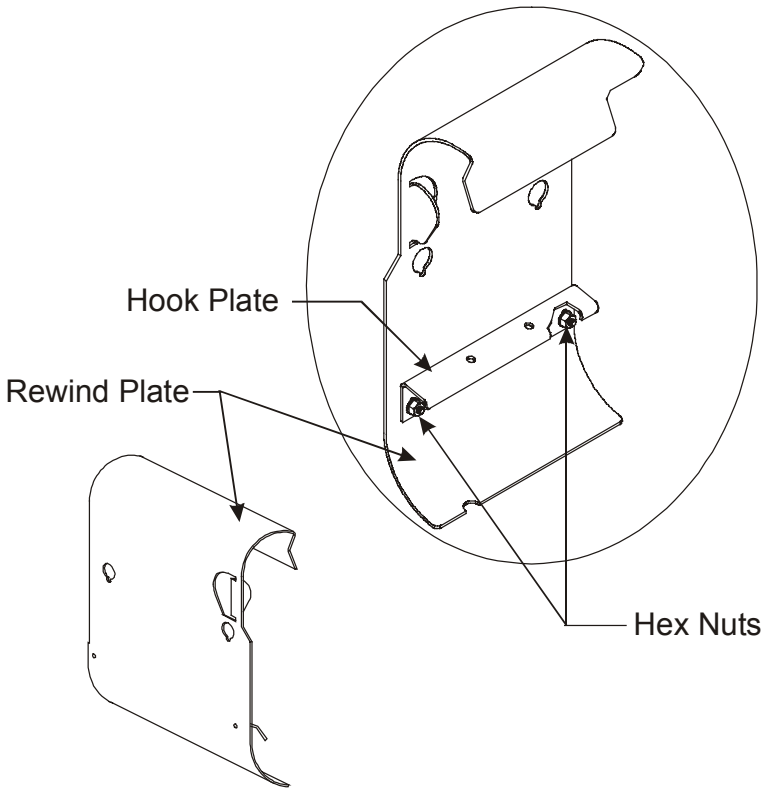


Figure 4-12 Rewind Plate Assembly

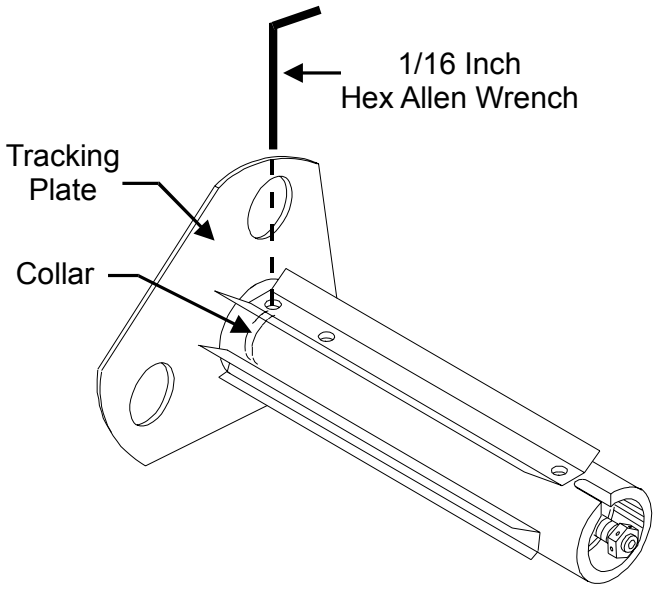


Figure 4-13 Rewind Spindle Positioning

Peel-Off Mode

In peel-off mode, the lower roller alignment has the same affect on media tracking as the rewind plate alignment does in rewind mode. Refer to Figure 4-14 and perform the following procedure.

1. Use a 7/64" hex allen wrench to loosen the two allen head screws which attach the platen support bracket to the side plate.
2. Moving the bracket toward the front of the machine moves the label backing material away from the rewind tracking plate. Moving the bracket toward the rear of the machine moves the label backing toward the tracking plate. Adjust bracket position as required and tighten the allen head screws.
3. Repeat steps 1 and 2 until required results are achieved.

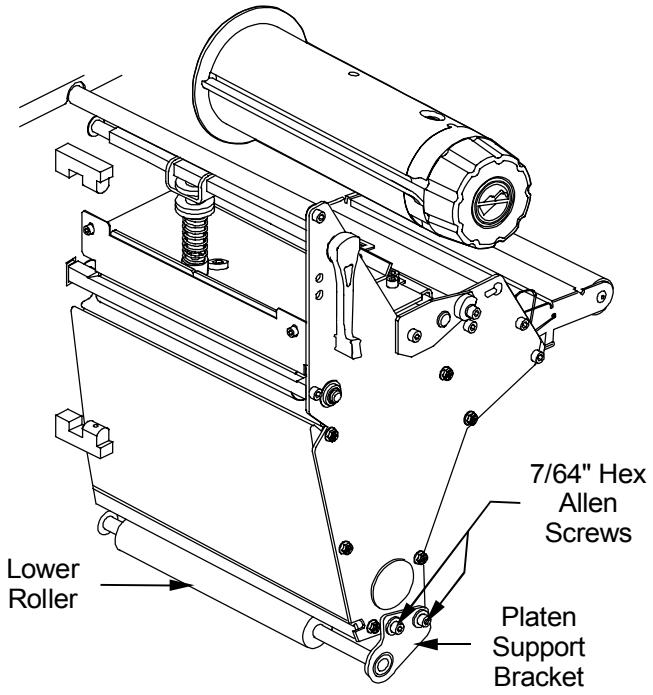


Figure 4-14 Peel-Off Lower Roller Alignment

Spindle Adjustment and Maintenance

There are four spindles that require periodic tension measurement and adjustment. Measuring spindle tension should be done at least once each year unless required more often due to high printer use. Tension should be adjusted whenever it is not within the tolerance range associated with that spindle.

WARNING

DO NOT DISASSEMBLE SPINDLE!!!

Tension Measurement Procedure

The procedure for measuring spindle tension is similar for all four spindles. Refer to the Spindle Tension Adjustment Diagram in Figure 4-15 for any specific requirements.

1. Use adhesive tape to attach a 2 wide strip of polyester film (part # 01776) to the spindle shaft (or core where required) as illustrated in Figure 4-15. Wind the polyester film around the spindle (or core) about 5 times in the direction indicated.
2. Measure tension by slowly pulling the film with a spring scale. Pull **ONLY** in the direction shown. The pull rate should typically be 2" per second.
3. Compare the spring scale reading with the force values provided in Figure 4-15. Perform the spindle adjustment only if the reading is out of spec.
4. If adjustment is made, recheck the tension after running a full roll of labels.

Spindle Tension Adjustment

Refer to the spindle tension adjustment diagram in Figure 4-15 and adjust the spindle tension as follows:

1. Loosen the set screw(s) if present in the adjustment nut at the end of the spindle.
2. Turn the adjustment nut clockwise to increase the tension or counter-clockwise to decrease the tension. Tighten the set screws if present.

NOTE: If the shaft of the ribbon take-up, media take-up or optional media supply spindle turns when attempting to turn the adjustment nut. Refer to Figure 4-13 and insert an allen wrench through the access hole on the inner end of the spindle and into the set screw in the shaft collar. DO NOT TURN THE ALLEN WRENCH. Simply hold the shaft in place with the allen wrench while turning the adjustment nut.

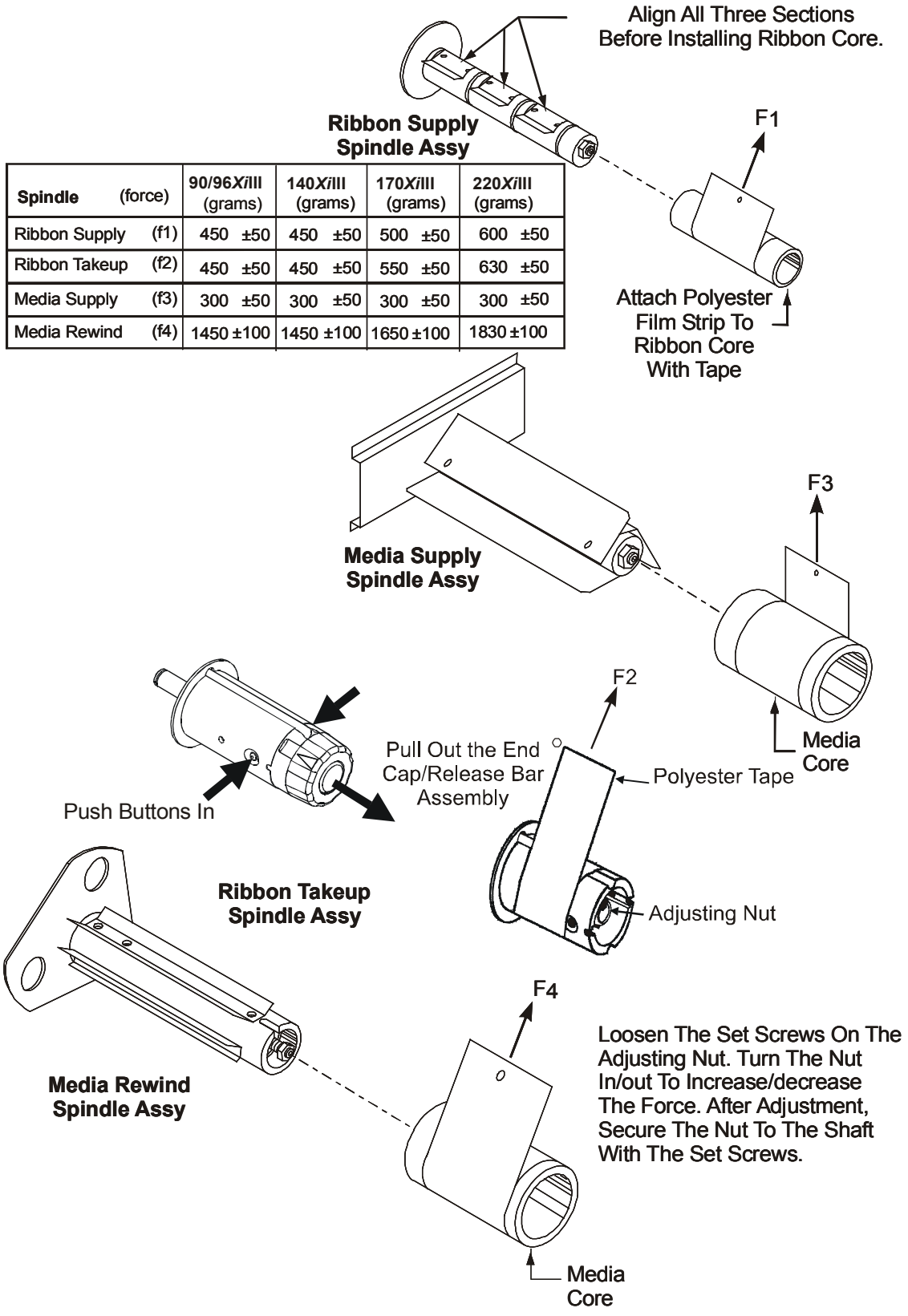
3. Measure the spindle tension as performed above. Compare the tension reading on the spring scale with the appropriate force value provided in Figure 4-15. Repeat the adjustment procedure until the correct tension is obtained.

Spindle Maintenance

- Tension should be checked periodically.
- Spindles should be kept clean of dust, dirt etc.

WARNING

DO NOT APPLY LUBRICATION TO ANY OF THE SPINDLES IN THE *Xi*III-SERIES PRINTERS.



Spindle (force)	90/96*Xi*III (grams)	140*Xi*III (grams)	170*Xi*III (grams)	220*Xi*III (grams)
Ribbon Supply (f1)	450 ±50	450 ±50	500 ±50	600 ±50
Ribbon Takeup (f2)	450 ±50	450 ±50	550 ±50	630 ±50
Media Supply (f3)	300 ±50	300 ±50	300 ±50	300 ±50
Media Rewind (f4)	1450 ±100	1450 ±100	1650 ±100	1830 ±100

Figure 4-15 Spindle Tension Adjustments

REMOVING THE MAIN LOGIC BOARD

The *Xi*III-Series main logic board may require removal. When replacement is necessary or when installing various options in the field follow the procedure below to remove the *Xi*III-Series main logic board.

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

1. Be sure the printer is OFF and the AC power cord and signal interface cables are disconnected.
2. Remove the left side panel of the printer by removing the phillips head screws which hold it on.
3. Remove any font card or memory card from the card slot located at the rear of the printer, by pressing the card release button.
4. If an optional interface board is installed in the printer, remove it.
5. Refer to Figure 4-16, disconnect all ribbon cable and small wire connectors from the main logic board (note their positions).
6. Refer to Figure 4-17. At the rear of the printer, remove the screws holding the serial and parallel interface connectors to the back of the printer.
7. Remove the main logic board by squeezing the tips of the plastic stand-off at the top and bottom right hand corners of the board.
8. Flash memory is installed on main logic board. Latest software can be downloaded from Zebra Technologies website.

Installing the Main Logic Board

Follow the procedure below to install the *Xi*III-Series main logic board.

1. Refer to Figure 4-16 and Table 4-2 and place rotary switch S1 in the proper position for the printer under repair (rotary switch S2 must remain in the zero (0) position).
2. Refer to Figure 4-17. Position the cables out of the way while placing the main logic board onto the plastic stand-off at the top and bottom right hand corners of the board.
3. At the rear of the printer, install the 4 phillips head screws which hold the serial and parallel interface connectors to the back of the printer.
4. Refer to Figure 4-16. Carefully reconnect all the ribbon cables and small wire connections to the proper connectors on the main logic board.

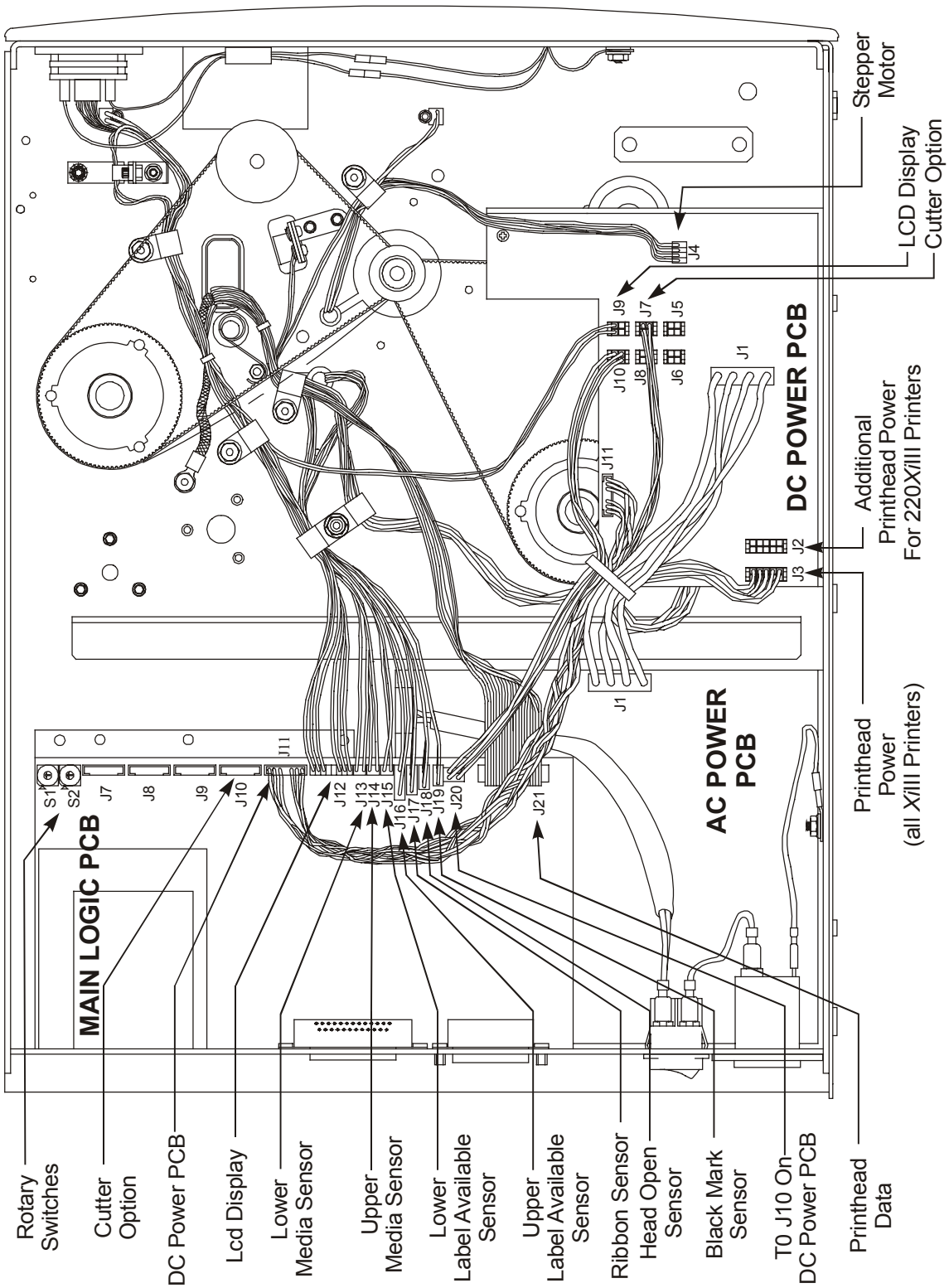


Figure 4-16 Circuit Board Location and Interconnection

5. Refer to Figures 4-17. If required, install the optional interface board through the rear of the printer. (Insure the data cable is properly connected between the main logic board and the interface board.)
6. Reinstall font card or memory card into the card slot located at the rear of the printer.
7. Reconnect the AC power cord and the communication cable.
8. Turn the printer ON and configure the printer parameters. **Be sure to enter the printhead resistance value indicated on the label attached to the printhead.**
9. Reinstall the left side panel.

NOTE: During the programming process, you must perform a complete printer calibration. Pressing the front panel CALIBRATE key will not provide the full calibration process required when a main logic board is first installed.

Switch Position	Function	Switch Position	Function
0	Diagnostics	8	140*Xi*III KST (8 dots/mm 8”/sec max)
1	170PAX Left Hand (12dots/mm)	9	140*Xi*III KST (8 dots/mm 8”/sec max)
2	170PAX Right Hand (12dots/mm)	A	140*Xi*III KST (8 dots/mm 12”/sec max)
3	170PAX Left Hand (8dots/mm)	B	140*Xi*III KST (8 dots/mm 12”/sec max)
4	170PAX Right Hand (8dots/mm)	C	Undefined
5	96*Xi*III Printhead Toshiba	D	Undefined
6	90*Xi*III Printhead (12 dots/mm)	E	220*Xi*III Printhead (8 dots/mm)
7	Undefined	F	170*Xi*III Printhead (12 dots/mm)

Table 4-2 S1 Switch Position

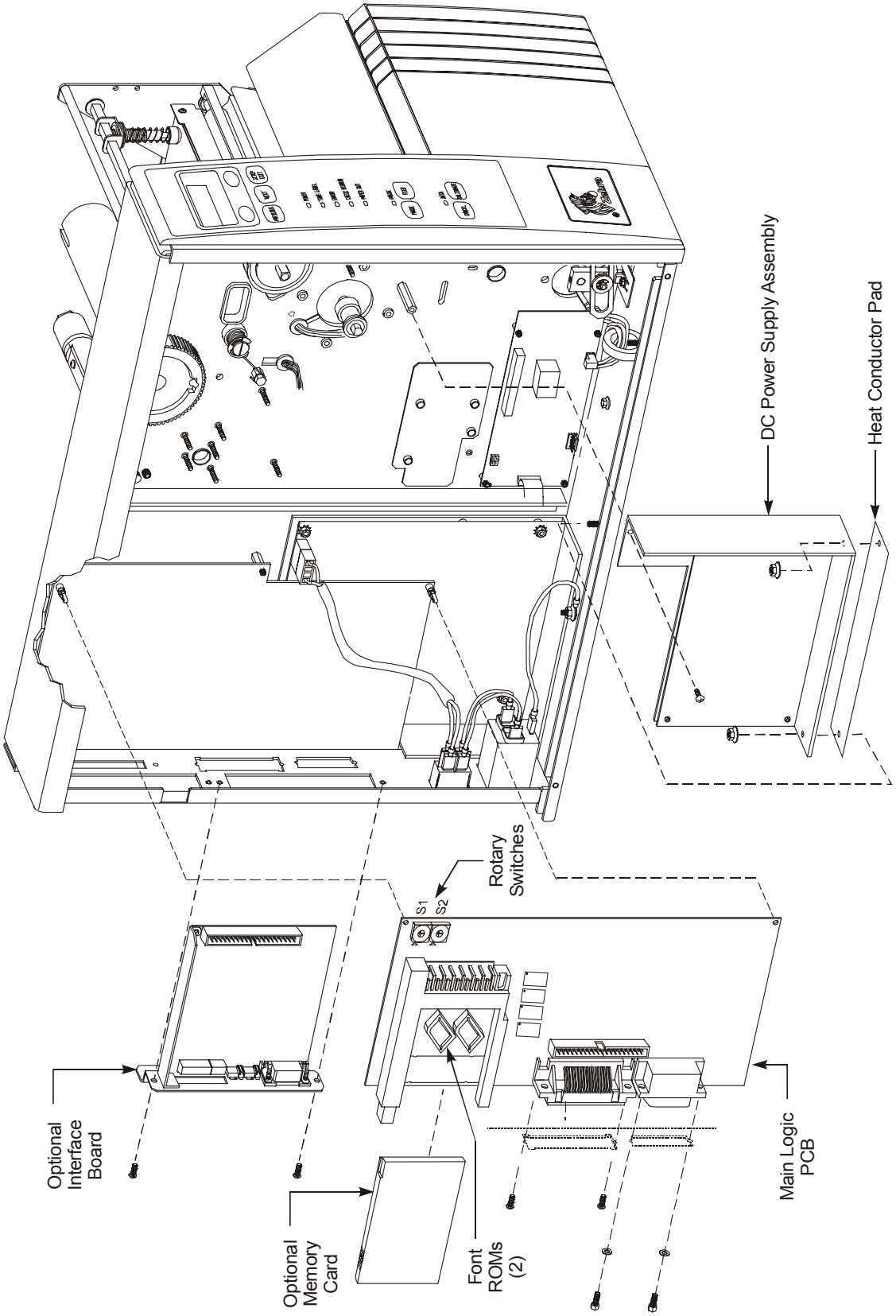


Figure 4-17 Main Logic Board and DC Power Supply Board

REMOVING THE DC POWER SUPPLY ASSEMBLY

The *Xi*III-Series DC power supply assembly may require removal when replacement is necessary or when installing various options in the field. Follow the procedure below to remove the *Xi*III-Series DC power supply assembly.

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

1. Be sure the printer is OFF and the AC power cord and signal interface cable are disconnected.
2. Remove the left side panel of the printer by removing the phillips head screws that hold it on.
3. Refer to Figure 4-16. Unplug all ribbon cable and small wire connectors from the DC power supply board (note their positions).
4. Refer to Figure 4-17. Remove the mounting screw and two hex nuts holding the DC power supply assembly against the printer chassis.
5. Remove the DC power supply assembly from the printer. (The black heat conduction pad need not be removed.)
6. Perform the installation procedure below, being very careful with all cables.

INSTALLING THE DC POWER SUPPLY ASSEMBLY

Follow the procedure below to install the *Xi*III-Series DC power supply assembly.

1. Refer to Figure 4-17. Position the cables out of the way while placing the DC power supply assembly into the printer. (Insure the heat conduction pad is in position.)
2. Refer to Figure 4-17. Install the mounting screw and two hex nuts that hold the DC power supply assembly against the printer chassis.
3. Refer to Figure 4-16. Carefully connect all the Ribbon Cables and Small Wire Cables to the proper connectors on the DC Power Supply Board.
4. Reconnect the AC power cord and the signal interface cable.
5. Hold in the PAUSE key while turning the AC power ON. Observe the printer Power-On Self Test and examine the test labels which print for proper print quality. (If necessary, refer to the user's guide to configure the darkness setting.)
6. Reinstall the left side panel.

REMOVING THE AC POWER SUPPLY ASSEMBLY

The *Xi*III-Series AC power supply assembly may require removal. When replacement is necessary or when installing various options in the field follow the procedure below to remove the *Xi*III-Series AC power supply assembly.

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

1. Be sure the printer is OFF and the AC power cord and signal interface cables are disconnected.
2. Remove the left side panel of the printer by removing the phillips head screws that hold it on.
3. Refer to Figure 4-16. Unplug all ribbon cable and small wire connectors from the main logic board and AC power supply board (note their positions).
4. Remove the hex nut holding the ground lead from the power entry module to the printer chassis.
5. Refer to Figure 4-18. Remove the 2 screws at the top and center right hand corners of the metal mounting plate directly behind the main logic board.
6. At the rear of the printer, remove the 3 phillips head screws holding the rear panel to the back of the printer.
7. Slide the main logic board and rear panel assembly out and away from the printer.
8. Remove the AC power supply assembly by removing the 5 hex nuts and 2 spacers which hold the assembly against the mounting posts. (The black heat conduction pad need not be removed.)
9. Perform the AC power supply assembly installation procedure below, being very careful with all cables.

INSTALLING THE AC POWER SUPPLY ASSEMBLY

Follow the procedure below to install the *Xi*III-Series DC power supply assembly.

1. Refer to Figure 4-18. Position the cables out of the way while placing the AC power supply assembly into the printer. (Insure the heat conduction pad is in position.)
2. Refer to Figure 4-18. Install the 5 hex nuts and 2 spacers that hold the AC power supply assembly against the printer chassis. (Insure the plastic spacers are installed on the two left posts.)
3. Slide the main logic board and rear panel assembly into the printer.
4. Refer to Figure 4-18. Install the 2 screws at the top and center right hand corners of the metal mounting plate directly behind the main logic board.
5. At the rear of the printer, install the 3 phillips head screws which hold the rear panel to the back of the printer.
6. Use the hex nut to install the ground lead from the power entry module to the printer chassis. See Figure 4-18.

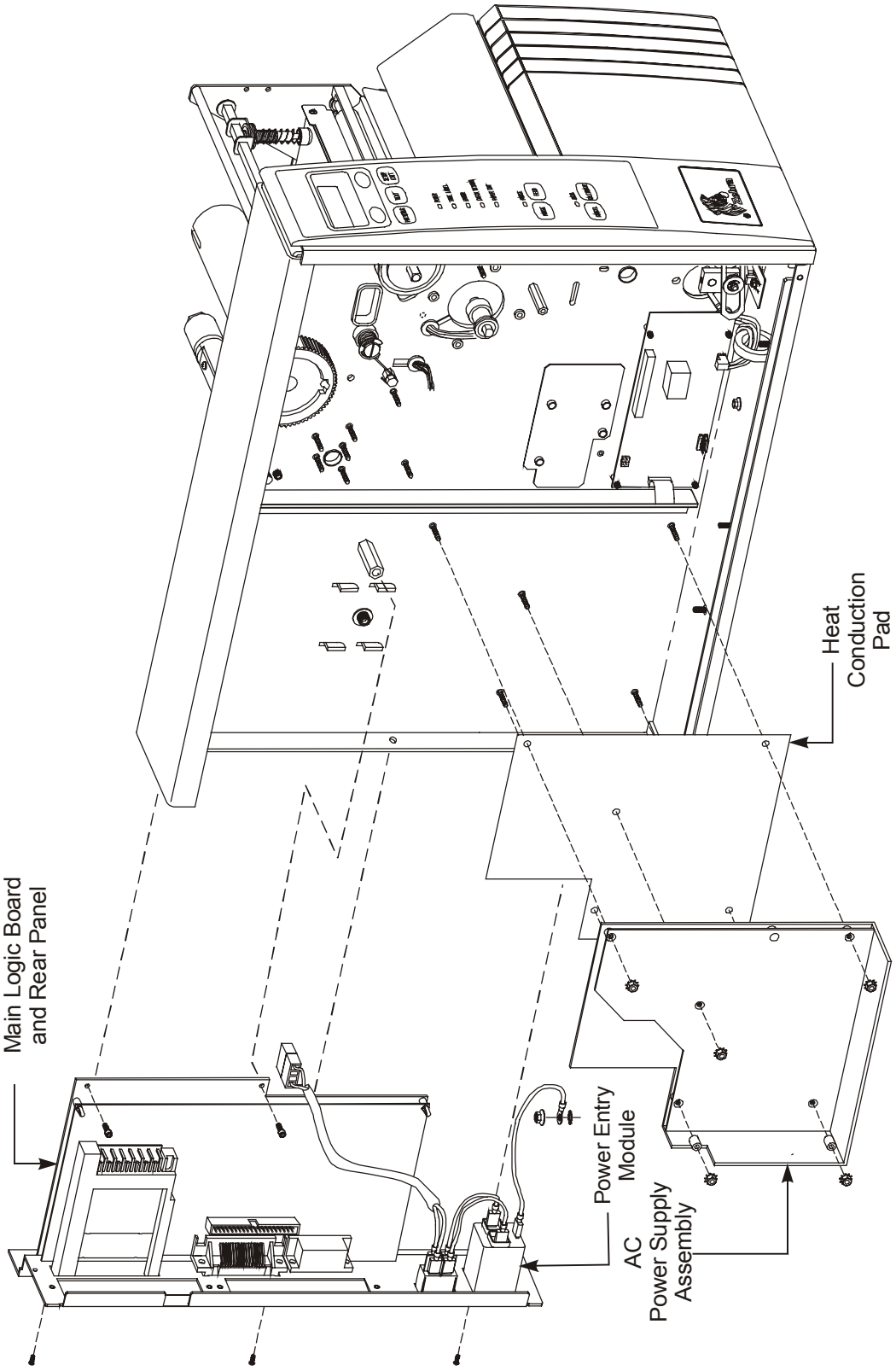


Figure 4-18 AC Power Supply Board

7. Refer to Figure 4-16. Install all ribbon cable and small wire connectors onto the main logic board and AC power supply board.
8. Reconnect the AC power cord and the signal interface cable.
9. Hold in the PAUSE key while turning the AC power ON. Observe the printer Power-On Self Test and examine the test labels which print for proper print quality.
10. Reinstall the left side panel.
11. The printer is now ready for operation.

MAIN DRIVE BELT - REMOVAL, REPLACEMENT & ADJUSTMENT

90/96*Xi*III, 140*Xi*III and 170*Xi*III

For 220*Xi*III, refer to page 4-41.

1. Turn the printer OFF and remove the AC power cord.
2. Remove the left side panel of the printer by removing the phillips head screws that hold it on.
3. Refer to Figure 4-19 and rotate the ribbon take-up pulley until the 3 holes in the pulley are aligned with the 3 mounting screws which hold the ribbon take-up spindle assembly to the printer frame.
4. Use a 9/64 allen wrench to reach through the holes in the ribbon take-up pulley and loosen the 3 spindle assembly mounting screws.
5. Slide the ribbon take-up spindle assembly to the right to relieve the tension on the main drive belt.
6. Remove the old main drive belt and install the new one.
7. Hook a 2200 gram spring scale to the belt as shown in Figure 4-19, and carefully slide the ribbon take-up spindle assembly to the left to increase belt tension.
8. When a scale reading of 2000 grams ± 250 grams (4.5 lbs. ± 0.5 lbs.) creates a deflection of 1/4 inch, tighten the 3 mounting screws to a torque of 20 inch-pounds.
9. Replace the left side panel and reapply AC power.

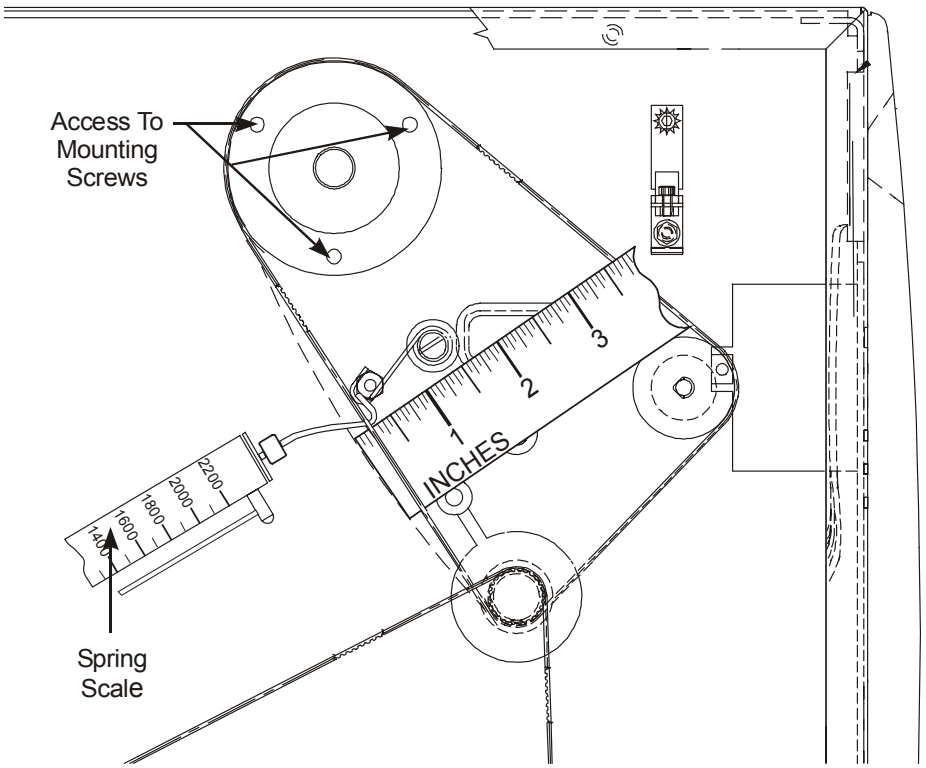


Figure 4-19 90/96/140/170 *Xi*III Main Drive Belt

220*Xi*III

For 90/96*Xi*III, 140*Xi*III and 170*Xi*III, refer to page 4-40.

1. Turn the printer OFF and remove the AC power cord.
2. Remove the left side panel of the printer by removing the phillips head screws that hold it on.
3. Refer to Figure 4-20 and note the position of the idler gear used to adjust the tension of the main drive belt.
4. In the media compartment, locate the idler gear mounting screw. Use a 7/64 allen wrench to loosen the idler gear mounting screw.
5. Refer to Figure 4-20 and slide the idler gear assembly toward the rear of the printer to relieve the tension on the main drive belt.
6. Remove the old main drive belt and install the new one.
7. Hook a 2200 gram spring scale to the belt as shown in Figure 4-20, and carefully slide the idler gear assembly toward the front of the printer to increase belt tension.
8. When a scale reading of 2000 grams ± 200 grams (4.5 lbs. ± 0.5 lbs.) creates a deflection of 1/4 inch, tighten the idler gear mounting screw.
9. Replace the left side panel and reapply AC power.

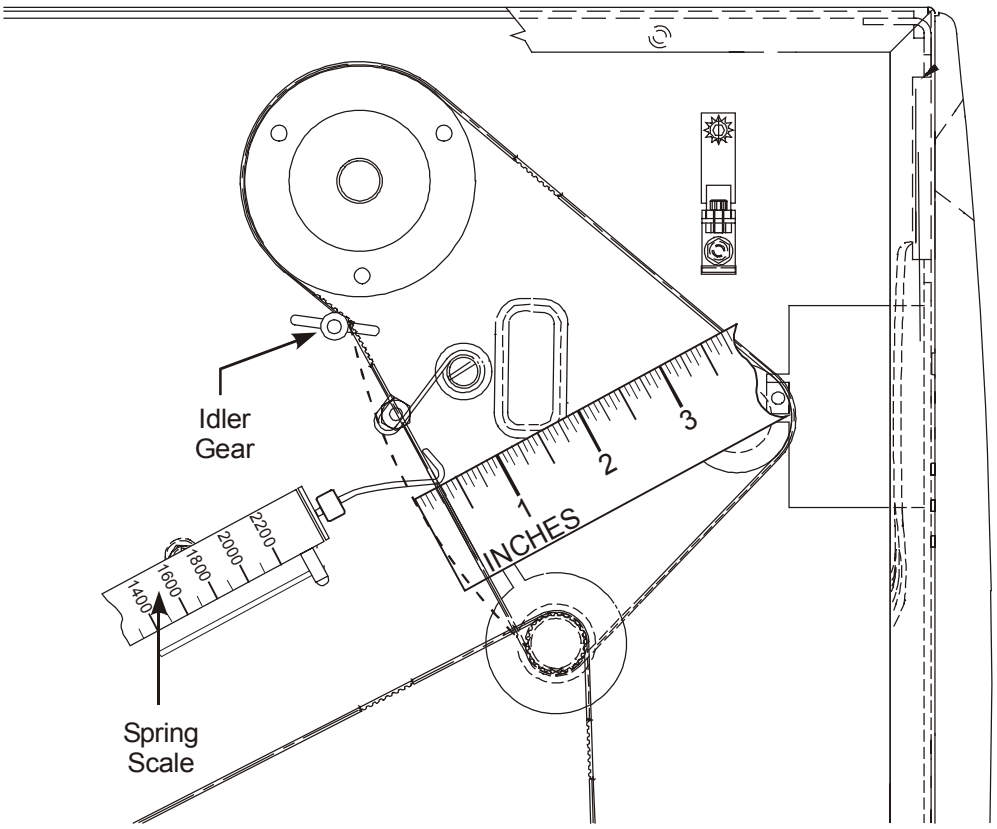
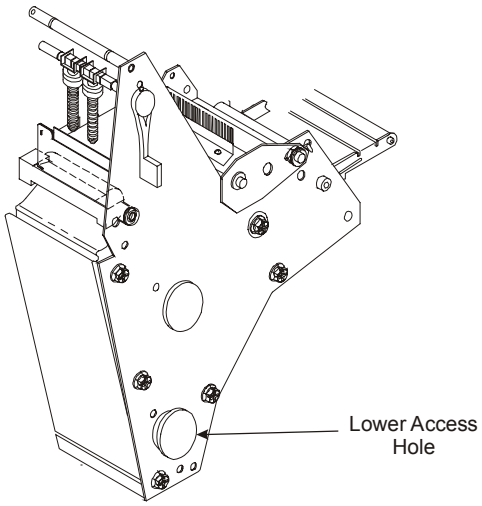


Figure 4-20 220*Xi*III Main Belt

REWIND DRIVE BELT - REMOVAL, REPLACEMENT & ADJUSTMENT

1. Turn the printer OFF and remove the AC power cord.
2. Refer to Figure 4-17 and remove the DC power supply from the printer.
3. Refer to Figure 4-21 and note the position of the idler gear used to adjust the tension of the rewind drive belt.
4. On the media side of the printer locate the lower access hole in the side frame and remove the plug. Use a 7/64 allen wrench with a 10" minimum shaft length (90/96/140/170*Xi*III) or a 12" minimum shaft length (220*Xi*III) to reach through the hole and loosen the idler gear mounting screw.



5. Slide the idler gear assembly toward the front of the printer to relieve the tension on the rewind drive belt.
6. Remove the old rewind drive belt and install the new one.
7. Hook a 2200 gram spring scale to the belt as shown in Figure 4-21, and carefully slide the idler gear assembly to the left to increase belt tension.
8. When a scale reading of 2000 grams ± 250 grams (4.5 lbs. ± .5 lbs.) creates a deflection of 1/4, tighten the idler gear mounting screw to a torque of 20 inch-pounds.
9. Refer to Figure 4-17 and perform the DC power supply installation procedure.

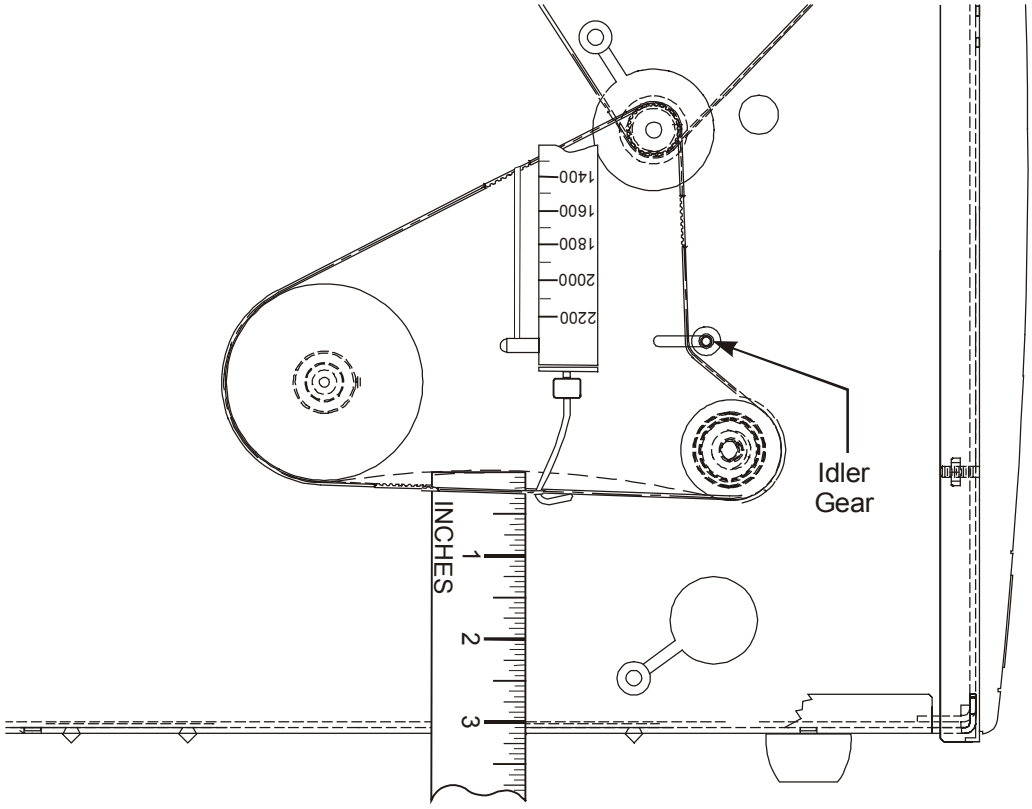


Figure 4-21 Rewind Drive Belt

AC POWER FUSE REPLACEMENT

The *Xi*III-Series printer uses a metric-style fuse (5 x 20 mm IEC) rated at F5A, 250V. The AC power entry module comes with two approved fuses in the fuse holder: one is "In-Circuit" and the second is provided as a "spare" (refer to Figure 4-22). The end caps of the fuse must bear the certification mark of a known international safety organization (refer to Figure 4-23). To replace a faulty fuse, use the following procedure.

WARNING

TURN THE PRINTER'S AC POWER SWITCH OFF AND DISCONNECT THE PRINTER'S AC POWER CABLE BEFORE REPLACING ANY FUSES.

1. Refer to Figure 4-22. Using a small blade screwdriver or similar tool, remove the fuse holder that is part of the AC power entry module at the rear of the printer.
2. Remove the faulty fuse and install a new fuse in the "In-Circuit" position. If you use the spare fuse, be sure to order a new replacement fuse. Fuses can be ordered from your Zebra distributor.
3. Snap the fuse holder back into the AC power entry module.
4. Reconnect the power cable and turn printer ON.

NOTE: If AC power is not restored, an internal component failure may have occurred. The printer will require servicing.

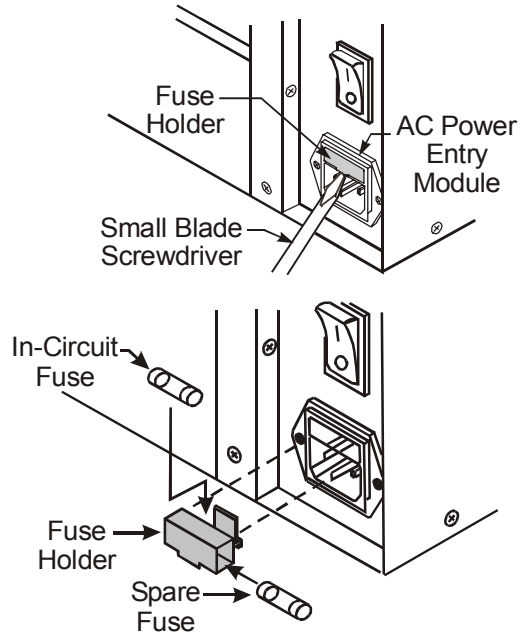


Figure 4-22 AC Power Fuse Replacement

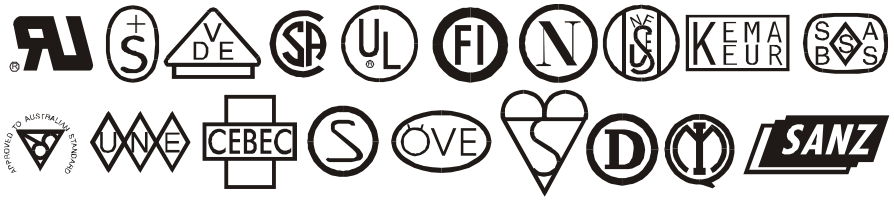


Figure 4-23 International Safety Organizations

PLATEN ROLLER INSTALLATION

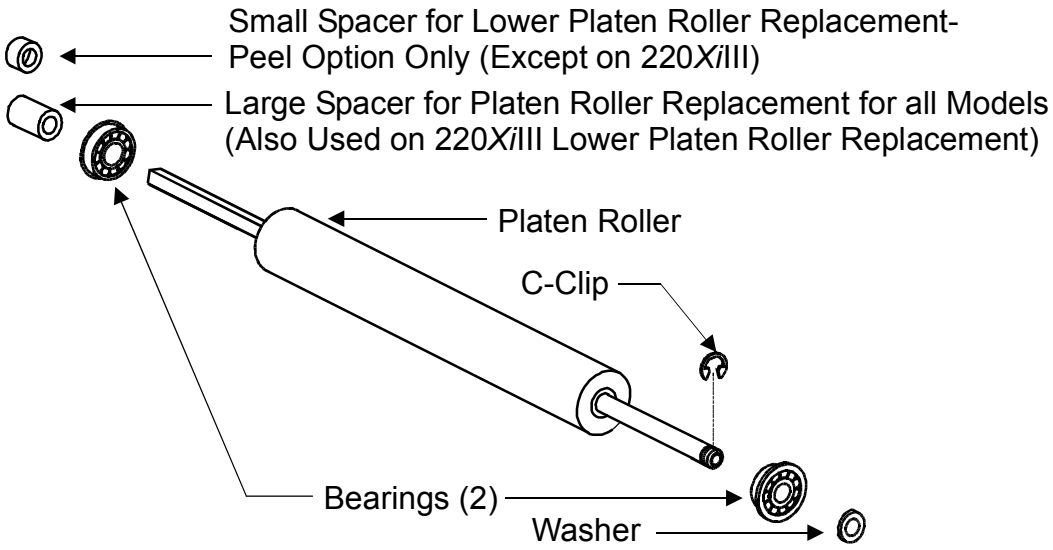

Small Spacer for Lower Platen Roller Replacement-
Peel Option Only (Except on 220XiIII)
Large Spacer for Platen Roller Replacement for all Models
(Also Used on 220XiIII Lower Platen Roller Replacement)
Platen Roller
C-Clip
Bearings (2)
Washer

Figure 4-24 Platen Roller Assembly

Platen Roller Replacement

1. Turn the printer off and remove the power cord and the printer communications cable (if connected).
2. Open the printhead assembly and remove any media and ribbon.
3. Remove the left side panel of the printer by removing the phillips head screws holding it in place.
4. Carefully slide the main drive belt off of the ribbon take-up Pulley (see Figure 4-25).
5. Using the 2 mm allen wrench loosen, but do not remove, the two set screws in the platen pulley assembly (see Figure 4-25).
6. Pull the platen pulley off of the platen roller shaft.
7. Using a piece of a label (or masking tape), mark the peel/tear-off bar so that you can identify the top and right side of the bar for reinstallation (see Figure 4-26).
8. Using the 7/64" allen wrench, remove the peel/tear-off bar mounting screw near the platen roller shaft (see Figure 4-26).
9. Remove the peel/tear-off bar.
10. Remove the C-clip off the platen roller as shown in Figure 4-26.
11. Slide the platen roller as far to the left as possible and remove the right bearing.
12. Slide the platen roller to the right and remove the roller.
13. Remove the left bearing.

NOTE: Do not re-use the old bearings.

14. Note the orientation of the new bearings in Figure 4-24. Install the new right bearing with the flange of the bearing on the outside of the right side of the print mechanism (see Figure 4-26).
15. Orient the replacement platen roller so that the short end of the shaft with the groove is on the right side (when facing the front of the printer).
16. Insert the right end of the shaft into the bearing installed in step 14.
17. Slide the washer included in the kit on the right end of the platen roller shaft as shown in Figure 4-24.
18. Install the C-clip on the right end of the platen roller shaft as shown in Figure 4-26.

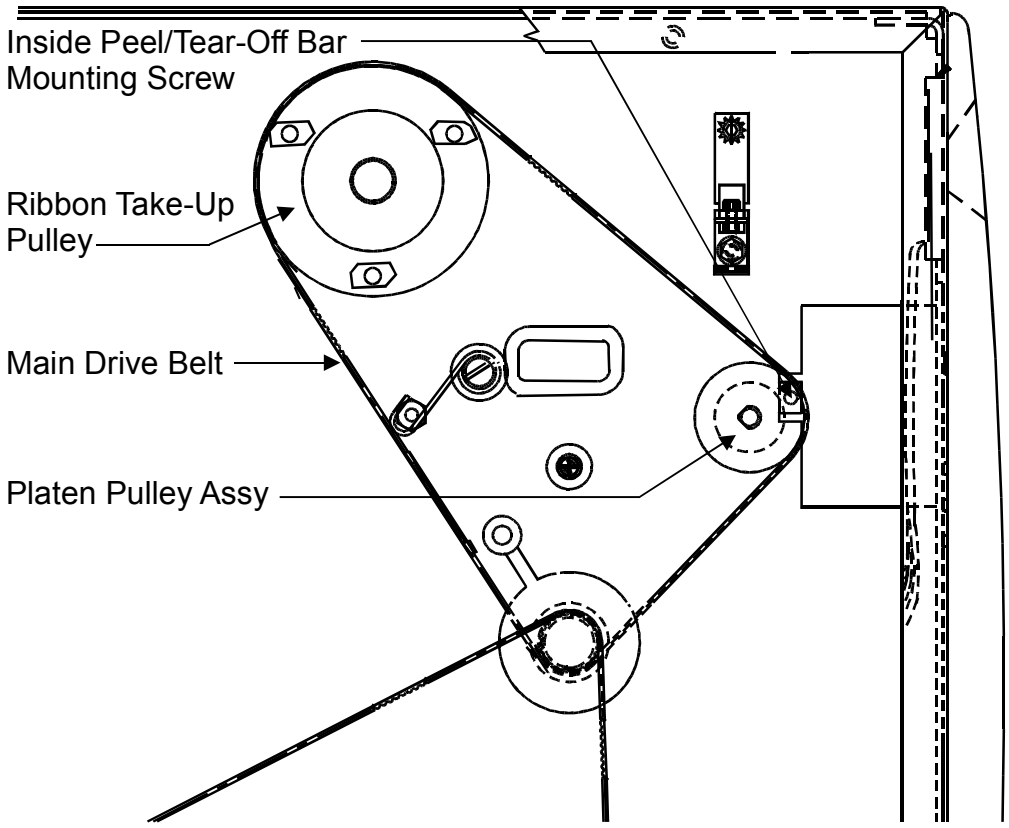


Figure 4-25 Left Side, Side Frame View of Main Drive Belt

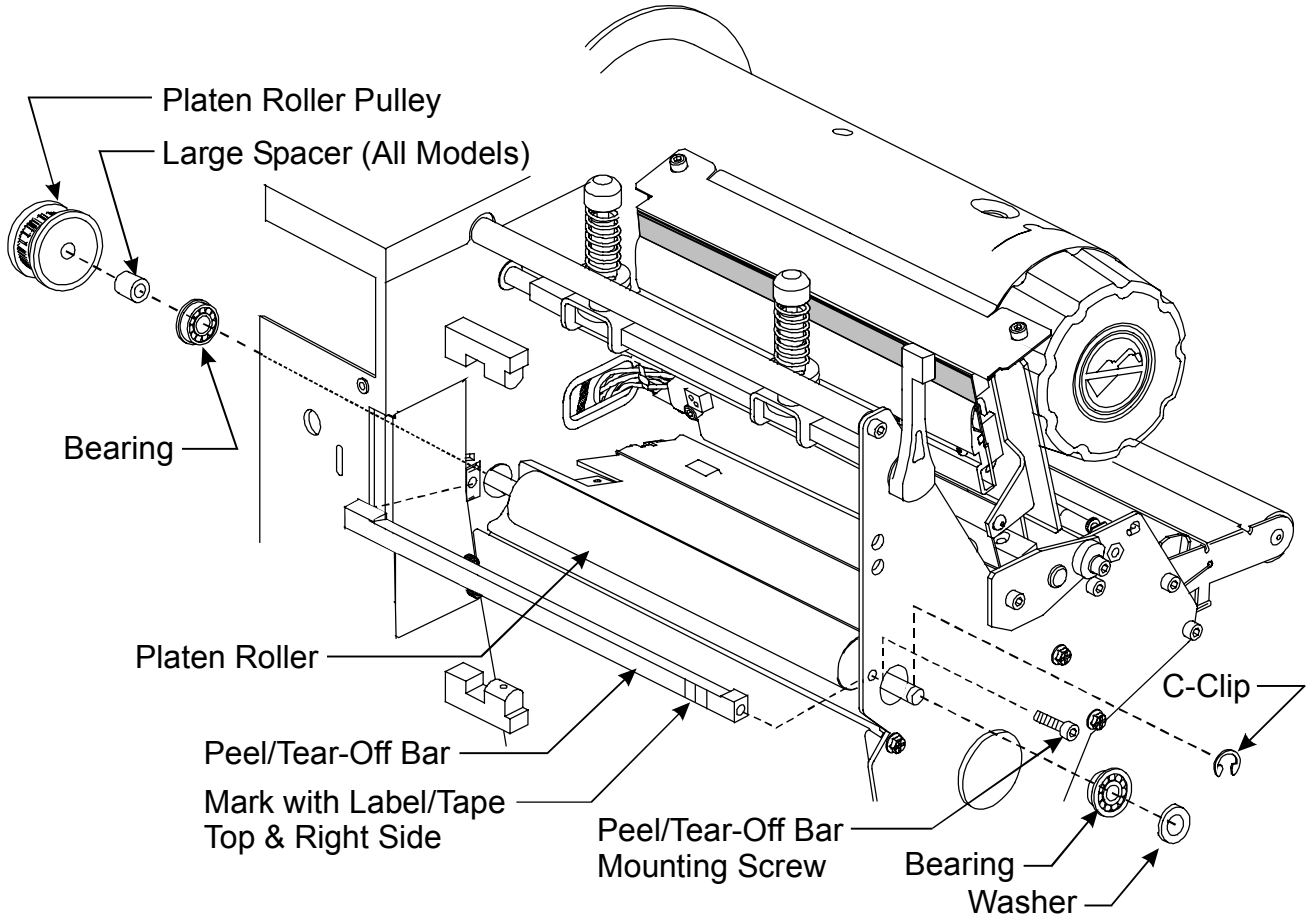


Figure 4-26 Print Mechanism

23. Install the left bearing from the left side of the printer, with the flange on the outside (left side) of the side frame.
24. Reinstall the peel/tear-off bar first by reorienting the bar based on the marking put on it in step 7.
25. Install both of the peel/tear-off bar mounting screws finger tight.
26. Insure that there is a gap between the platen roller and the peel/tear-off bar approximately the thickness of a business card.
27. Tighten both peel/tear-off bar mounting screws.
28. Slide the large spacer on the left side of the platen roller shaft.
29. Slide the platen roller pulley on the left side of the platen roller shaft. Leave approximately a .020 gap between C-clip and washer on the right hand side of the platen roller shaft.
30. Tighten the two set screws on the platen roller pulley. Both set screws should be against the flat portions of the shaft.
31. Reinstall the main drive belt.

32. Reload media and ribbon.
33. Connect the power cord and perform a PAUSE Key Self Test to test print quality and observe the tracking of the main drive belt.
34. Replace the left side panel.
35. Replace the communications cable.

Peel Option Lower Platen Roller Replacement

1. Turn the printer off and remove the power cord and the printer communications cable (if connected).
2. Open the printhead assembly and remove any media and ribbon.
3. Remove the left side panel of the printer by removing the phillips head screws holding it in place.
4. Note and remove all ribbon cable connectors and small wire connectors from the DC power supply assembly (see Figure 4-27).
5. Remove the mounting screw and two hex nuts holding the DC power supply assembly against the chassis (see Figure 4-27).
6. Remove the DC power supply assembly.
7. Carefully slide the rewind drive belt off the media take-up pulley (see Figure 4-28).
8. Using the 2mm allen wrench loosen, but do not remove, the two set screws in the peel-off pulley assembly (see Figure 4-28).
9. Pull the peel-off pulley assembly off the lower platen roller shaft.
10. Using a 7/64” allen wrench, remove the two screws holding the roller adjust plate in place on the print mechanism (see Figure 4-29).
11. Remove the roller adjust plate and lower platen roller.
12. Remove the old bearing from the printer side frame.
13. Remove the C-clip from the end of the old platen roller.
14. Slide the roller adjust plate off of the old platen roller shaft and remove the bearing.

NOTE: Do not re-use the old bearings.

15. Install a new bearing on the roller adjust plate with the flange of the bearing on the outside (right side) of the plate.
16. Orient the replacement platen roller so that the short end of the shaft with the groove is on the right side (when facing the front of the printer).
17. Slide the bearing and roller adjust plate on to the right end of the replacement platen roller shaft.

NOTE: For lower platen roller replacement (peel option only), the washer in the replacement kit is not used and should be discarded.

18. Slide the C-clip on the groove on the right end of the platen roller shaft.

19. Install the new left bearing from the left side of the printer, with the flange on the outside (left side) of the side frame.

NOTE: For lower platen roller replacement (peel option only), the small spacer is used for all models except the 220XiIII.

20. Slide the small spacer (large spacer for the 220*Xi*III) on the left side of the platen roller shaft.
21. Slide the media take-up pulley on the left side of the platen roller shaft. Leave approximately a .020 gap between C-clip and bearing on the right hand side of the platen roller shaft.
22. Tighten the two set screws on the media take-up pulley. Both set screws should be against the flat portions of the shaft.
23. Reinstall the rewind drive belt. If necessary, adjust the belt tension per the instructions found on page 4-42.
24. Reinstall the DC power supply assembly into the printer. Install the mounting screw and two hex nuts holding the DC power supply assembly against the chassis (see Figure 4-27).
25. Reconnect all ribbon cable connectors and small wire connectors to the DC power supply assembly. (See Figure 4-27.)
26. Reload media and ribbon in the peel mode.
27. Connect the power cord.
28. Perform a PAUSE Key Self Test and observe the tracking of the rewind drive belt, the tracking of the label backing material and to test print quality.

If the label backing material is tracking off to one side perform steps 29 through 31.

29. Using a 7/64" allen wrench, loosen the two screws holding the roller adjust plate on the print mechanism (see Figure 4-29).
30. Move the roller adjust plate in the appropriate direction to compensate for the tracking and tighten the allen head screws.
    - Moving the roller adjust plate toward the front of the printer moves the label backing material away from the roller adjust plate.
    - Moving the roller adjust plate toward the rear of the printer moves the label backing material towards the roller adjust plate.
31. Repeat steps 29 and 30 until the required results are achieved.
32. Replace the left side panel.
33. Replace the communications cable.

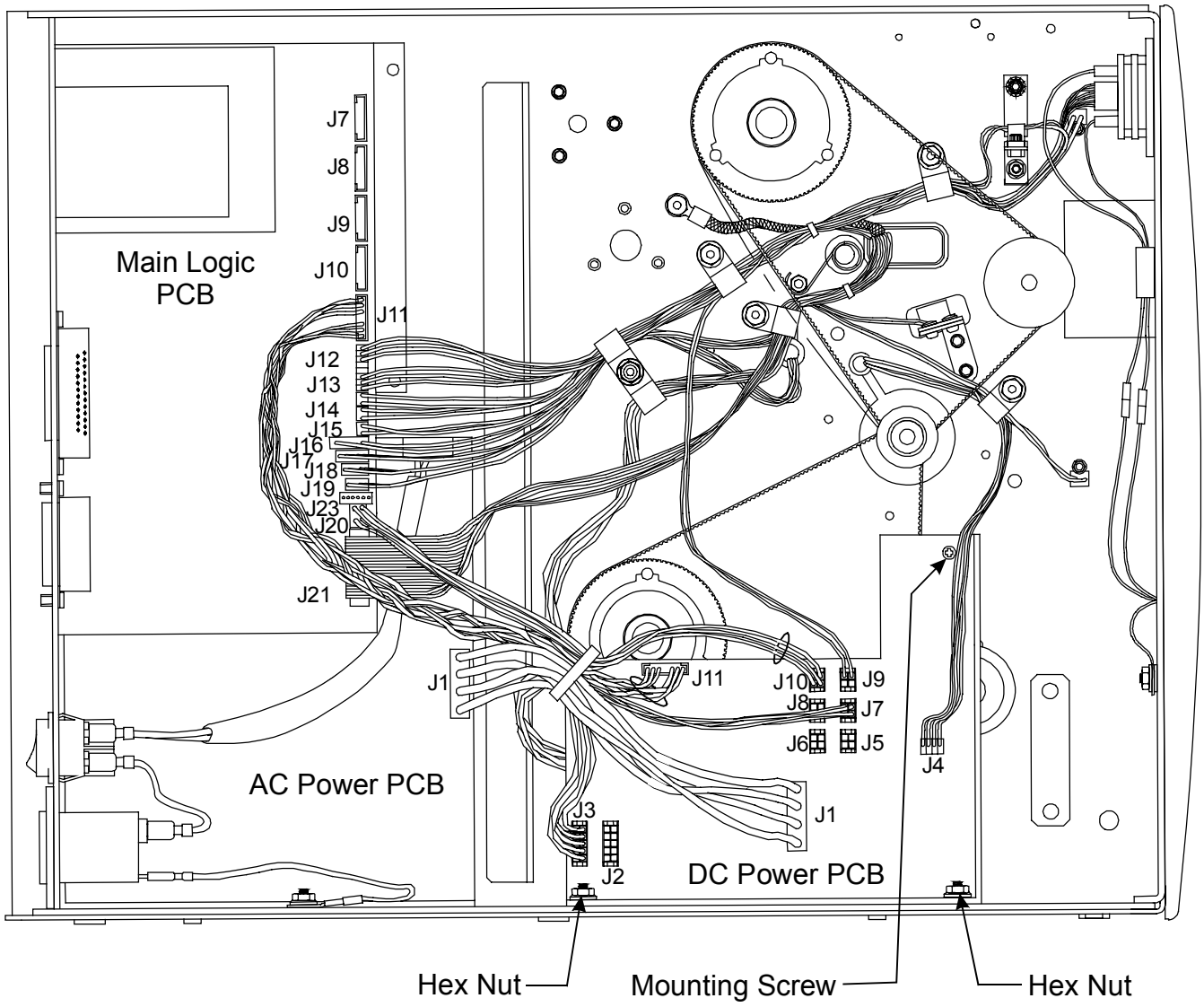


Figure 4-27 DC Power PCB Location and Interconnections for *Xi*III Printers

DC Power Connectors			
NOTE: J5-J10 have the same outputs.			
J1	J1 AC Power PCB	J7	Cutter Option
J2	Additional Printhead Power for 220*Xi*III Printers	J8	N/A
J3	Printhead Power for all *Xi*III Printers	J9	LCD Display
J4	Stepper Motor	J10	J20 Main Logic PCB Power
J5	N/A	J11	J11 Main Logic PCB Data
J6	N/A		

Table 4-3 DC Power Connections

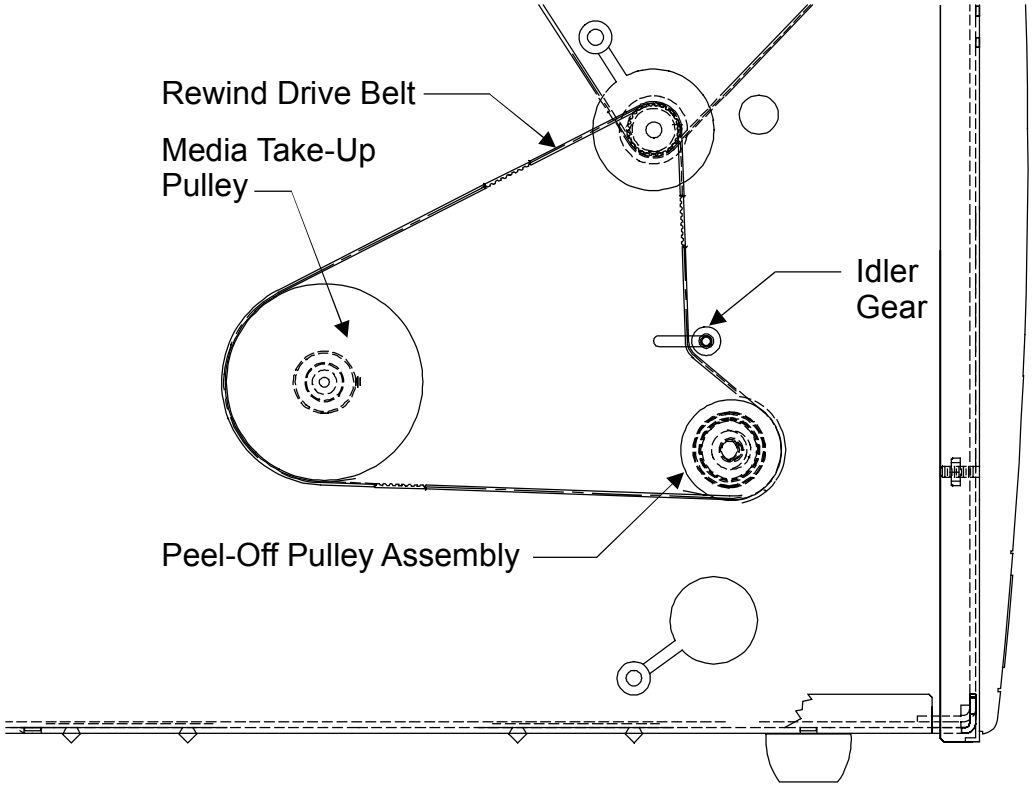


Figure 4-28 Left Side, Side Frame View of Rewind Drive Belt

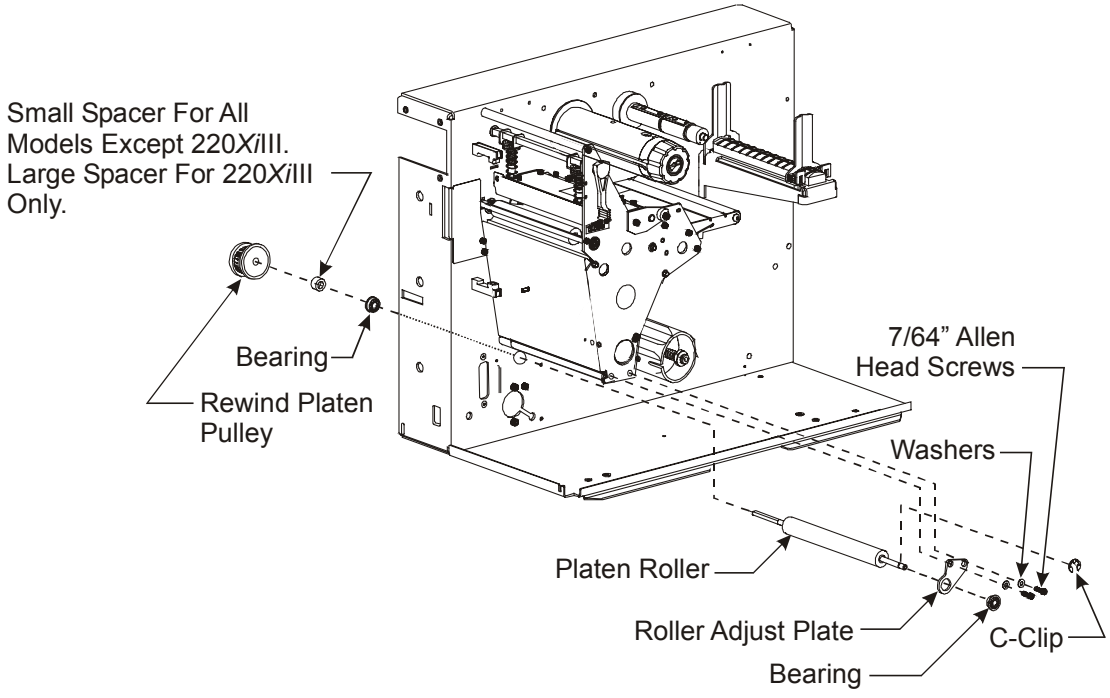


Figure 4-29 Print Mechanism View With Lower Platen Roller (Peel Option Only)

OPTION INSTALLATION

Font ROM Installation

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

Font ROM installation optional scalable and bit-mapped fonts are available in ROMs.

To install the font ROMs, refer to Figure 4-30 below.

1. Turn the AC power switch OFF and disconnect the power cord.
2. Remove the left side panel of the printer by removing the phillips head screws.
3. If there is a option board installed remove the option card shield. Push the card eject button to remove option board.
4. If there are program ROM's in the sockets you will have remove them.
5. Insert the tines of the extraction tool firmly into the slots in the chip socket. Be sure the tines catch under the ROM chip as you gently squeeze. The chip will rise out of the socket.
6. Insert the new ROM with the notched corner positioned to the top, as seen in Figure 4-30. Slowly seat the chip in place being sure it is straight in the socket.

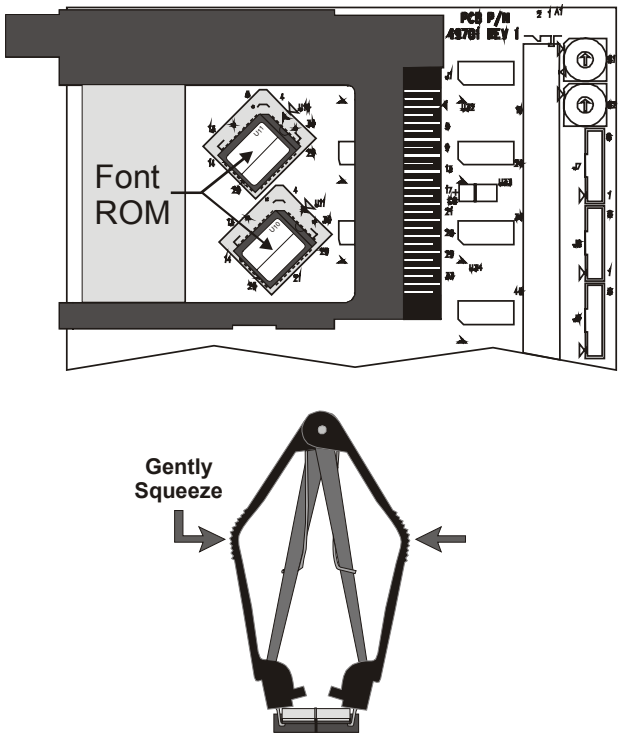


Figure 4-30 Font ROM Installation

Memory Card and Font Card Installation

To replace the memory card or font card, read the instructions included in the option kit. The general installation procedure is as follows:

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

1. Turn the AC power OFF before installing the card.
2. Refer to Figure 4-31 and remove the option card shield from the rear of the printer.
3. Insert the memory or font card, with the notch **UP**, into the card slot as shown. (Insert far enough to cause the eject button to pop out.)
4. Reinstall the option card shield over the option card and card slot.
5. Press and hold the FEED key while turning the printer power switch ON.
6. Verify the presence of additional memory or optional fonts by checking the information on the configuration label printed during the power on sequence.
7. The printer is now ready to operate with the additional memory or font option.

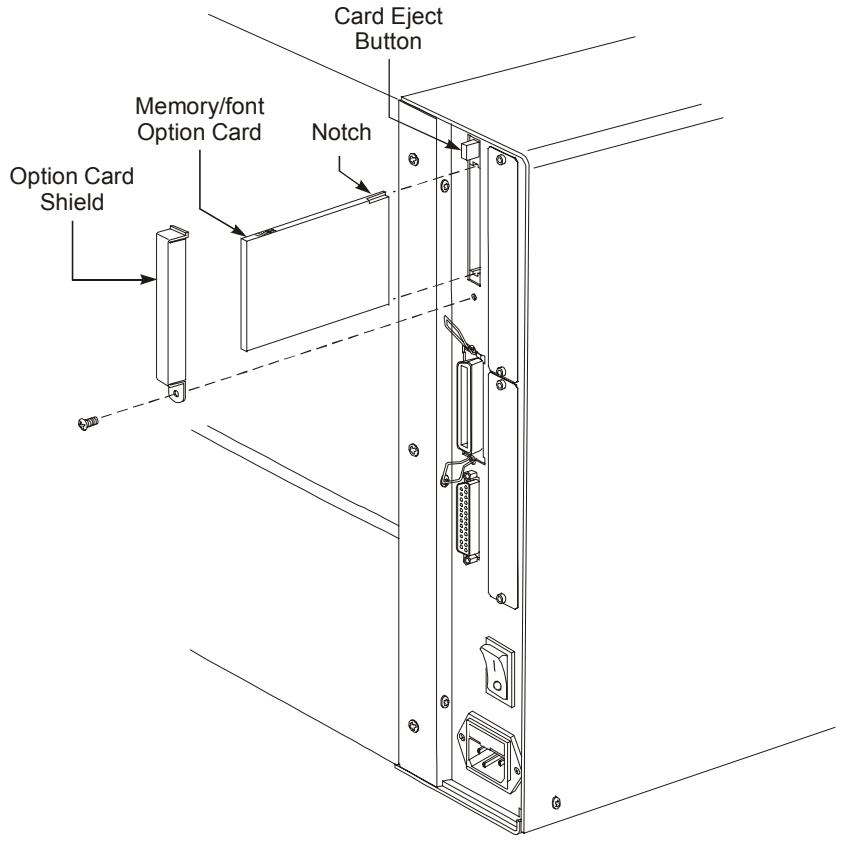


Figure 4-31 Memory and Font Card Installation

SIMM Installation

To replace the SIMM, read the instructions included in the option kit. The general installation procedure is as follows:

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

1. Be sure the printer is OFF and the AC power cord is disconnected.
2. Remove the left side panel of the printer by removing the phillips head screws that hold it on.
3. Refer to Figure 4-32 and locate the SIMM socket on the main logic board.
4. Install the SIMM into the socket as illustrated in Figure 4-32. Make sure the SIMM is locked securely into position.
5. Reconnect the AC power cord.
6. Reinstall left side panel.
7. Press and hold the FEED Key while turning the printer power switch ON.
8. Verify the presence of additional memory or optional fonts by checking the information on the configuration label printed during the power on sequence.
9. The printer is now ready to operate with the additional memory option.

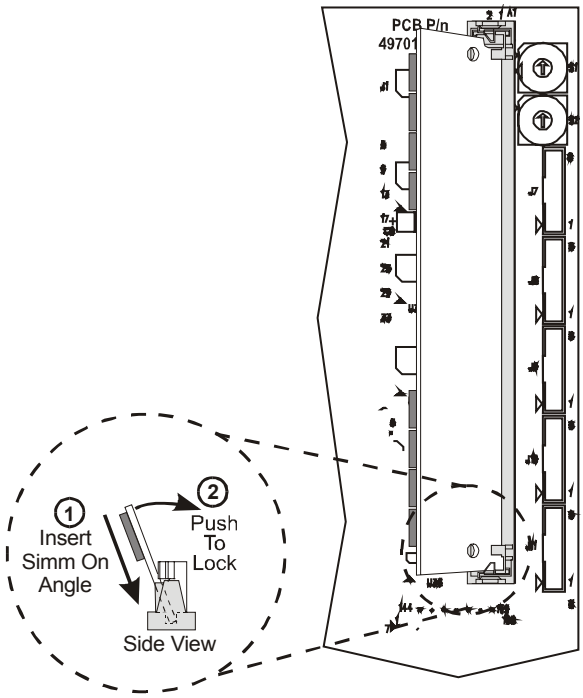


Figure 4-32 SIMM Installation

Optional Supply Spindle Installation

1. Be sure the printer is OFF and the AC power cord and printer cable is disconnected.
2. Remove the left side panel of the printer by removing the phillips head screws that hold it on.

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS HIGHLY RECOMMENDED THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

3. Remove any font card or memory card from the card slot located at the rear of the printer, by removing the option card shield and pressing the card release button. See Figure 4-31.
4. If an optional interface board is installed in the printer, refer to the removal instructions in the maintenance manual for that board before continuing with this procedure.
5. Refer to Figure 4-33. Unplug all ribbon cable connectors and small wire connectors from the main logic board, (note their positions).

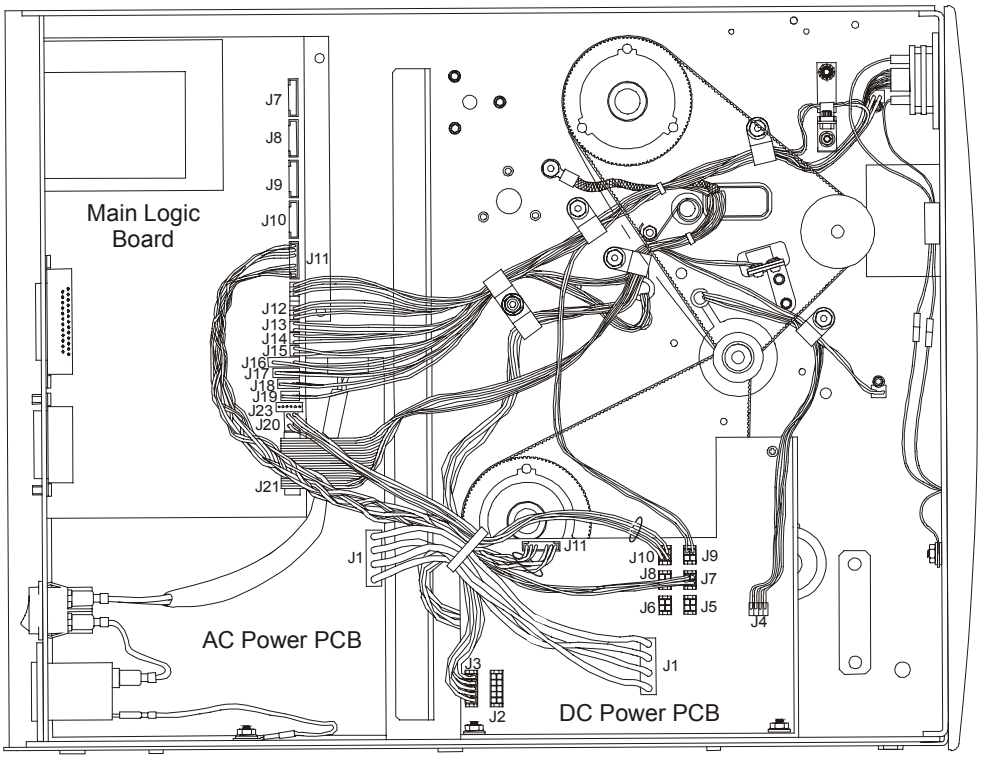


Figure 4-33 Main Logic Board

DC Power Connectors			
NOTE: J5-J10 have the same outputs.			
J1	J1 AC Power PCB	J7	Cutter Option
J2	Additional Printhead Power for 220*Xi*III Printers	J8	N/A
J3	Printhead Power for all *Xi*III Printers	J9	LCD Display
J4	Stepper Motor	J10	J20 Main Logic PCB Power
J5	N/A	J11	J11 Main Logic PCB Data
J6	N/A		

Table 4-4 DC Power Connector Identification

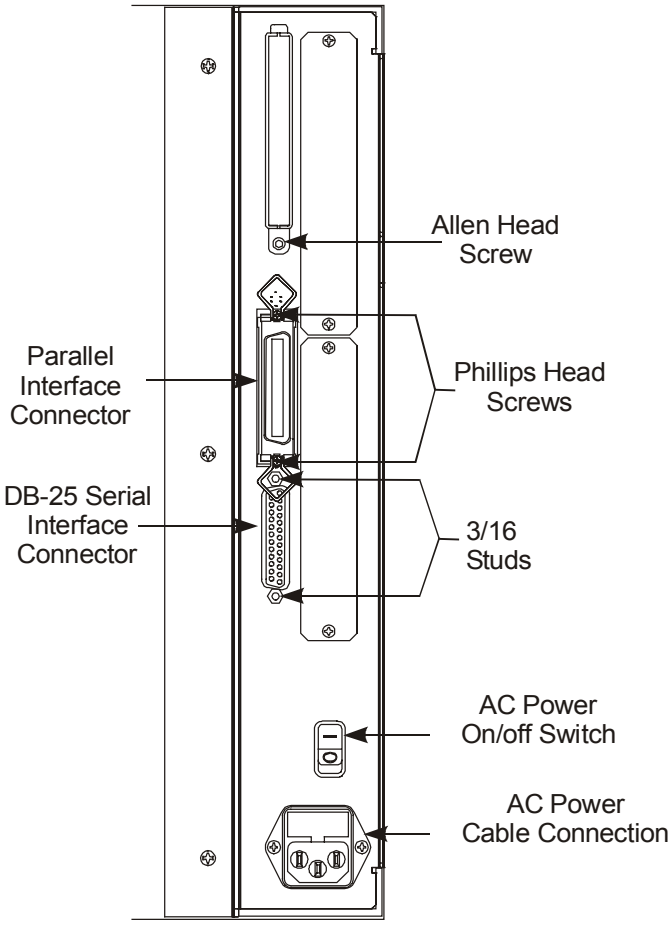


Figure 4-34 Rear View

6. Refer to Figure 4-34. At the rear of the printer, remove the screws holding the serial and parallel interface connectors to the back of the printer.
7. Remove the main logic board by squeezing the tips of the plastic standoff at the top and bottom right hand corners of the board.
8. Remove the main logic board mounting plate. See Figure 4-35.

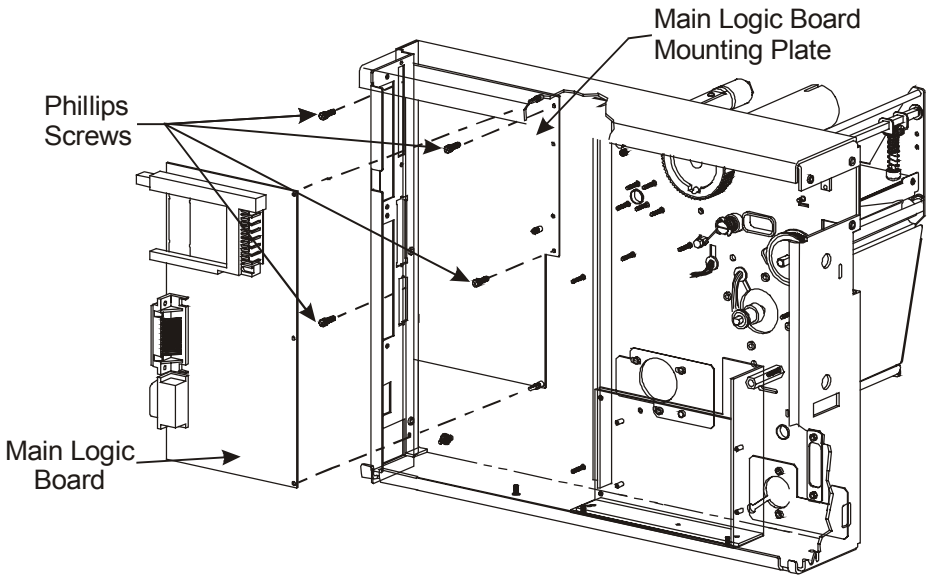


Figure 4-35 Mounting Bracket Removal

9. Use a 5/32" allen wrench to remove the media hanger mounting screw and washer. Refer to Figure 4-36.
10. Remove the media hanger by lifting it straight up then out from the printer frame.

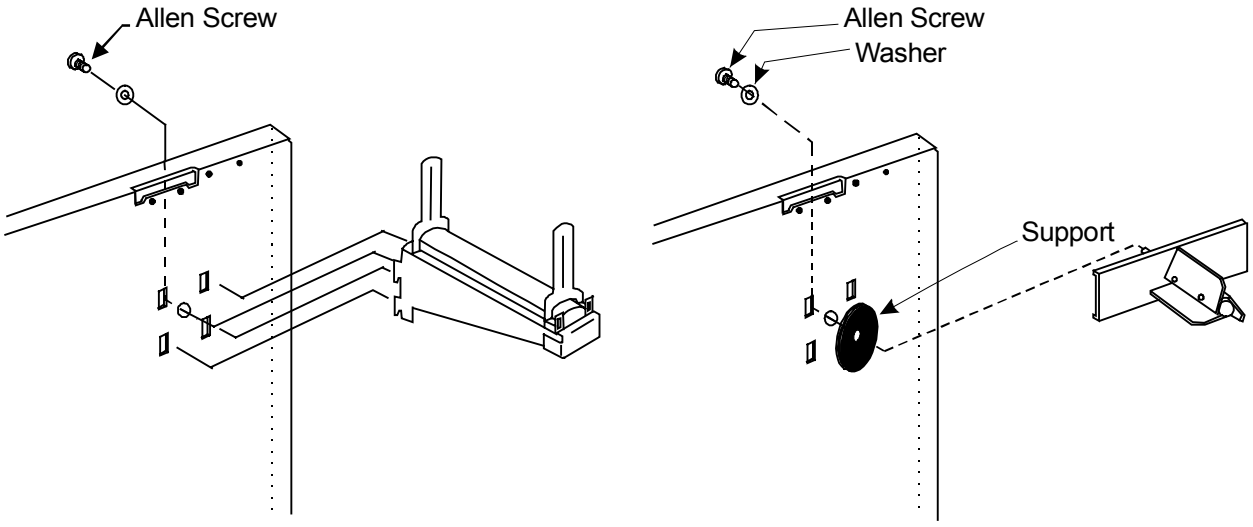


Figure 4-36 Removal and Installation

11. Install the media supply spindle with support between the shaft and the printer frame. Refer to Figure 4-36.
12. Install the screw and washer onto the end of the spindle shaft.
13. Use a 3/16" allen wrench tighten the mounting screw.
14. Re-install main logic board mounting plate. Refer to Figure 4-35.
15. Re-install the main logic board. Refer to Figure 4-35.

16. Reconnect all cables and small wire connector removed previously. See Table 4-4
17. Re-install any optional memory/font boards and option card shield. See Figure 4-31
18. Re-install any optional interface boards.
19. Reconnect cabling to interface boards.
20. To adjust spindle tension, refer to Figure 4-37.
21. Use adhesive tape to attach a 2 wide strip of polyester film (part # 01776) to the spindle shaft (or core where required) as illustrated. Wind the polyester film around the spindle (or core) about 5 times in the direction indicated
22. Measure tension by slowly pulling the film with a spring scale. Pull ONLY in the direction shown. The pull rate should typically be 2" per second.
23. The spring tension reading should 300 grams ±50.

If not make adjustments using the tension adjustment nut.

- Clockwise increases tension.
- Counter clockwise decreases tension.

24. If adjustment is made, recheck the tension after running a full roll of labels.

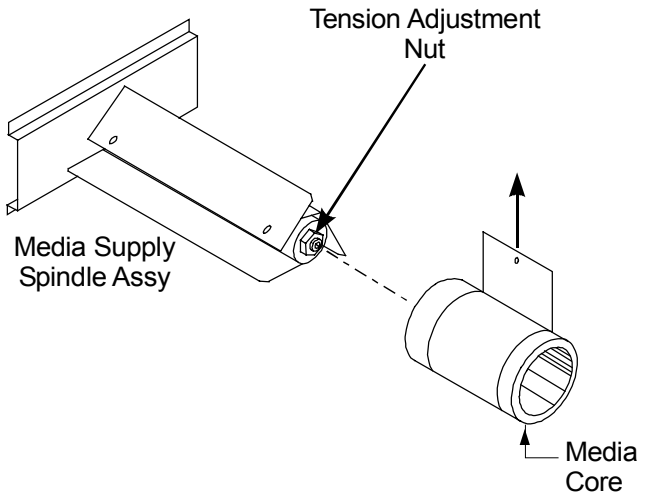


Figure 4-37 Spindle tension adjustment

25. Re-install side panel.
26. Refer to user guide for installation of media and ribbon.

Optional Bifold Door Installation

1. Raise the existing Media Access Door.
2. Remove the five (5) 6-32 7/64" socket head cap screws (Be sure to have a good hold on the door when removing the last screws) and set screws aside (see Figure 4-38).
3. Remove old door

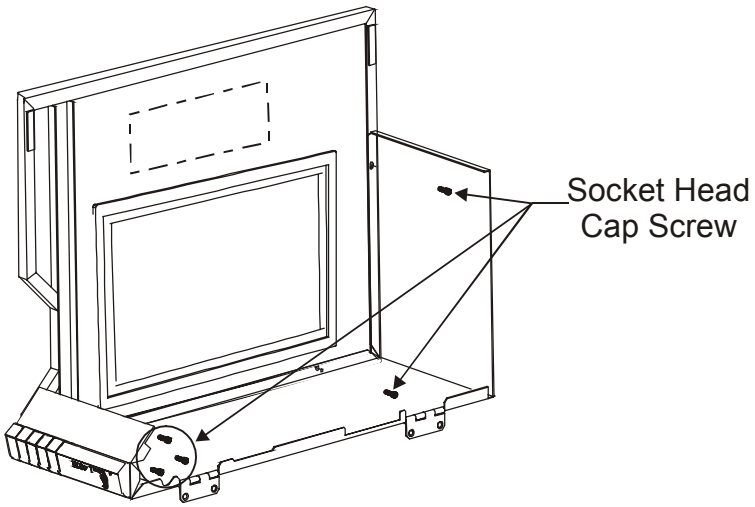


Figure 4-38 Old Door Removal

4. Install new door using the five (5) 6-32 7/64" socket head cap screws removed in step 2 (see Figure 4-39).
5. Installation is complete.

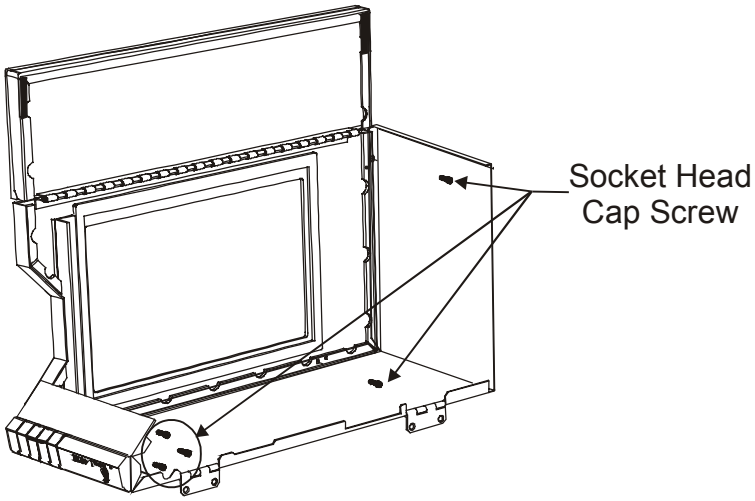


Figure 4-39 New Bifold Door Installation

Optional Counter Board Installation

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

Refer to Figure 4-40 when completing this procedure.

1. Be sure the printer is OFF and the AC power cord and printer cable is disconnected.
2. Remove the left side panel of the printer by removing the phillips head screws.

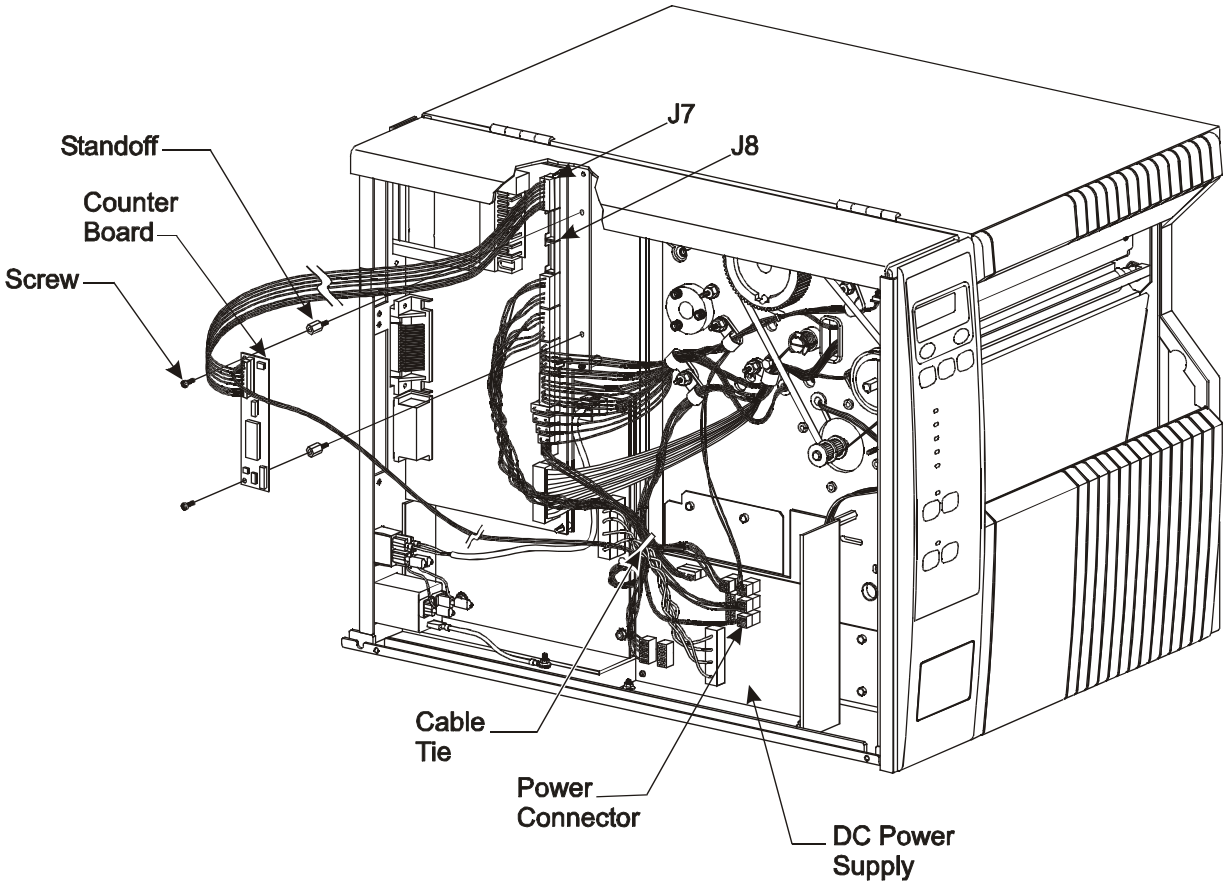


Figure 4-40 Side View of Printer

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

3. Locate the two mounting holes in the main logic board mounting plate.
4. Install the two plastic standoffs in these holes.
5. Align the counter board, with the cable connector on top, with the standoffs. Attach the counter board to the standoffs using the two plastic screws supplied.
6. Attach the cable as seen in Figure 4-40 to the counter board.
7. Connect the other end of the ribbon cable to either J7 or J8 on the main logic board.
8. Route the power connector and wires through the cable tie seen in Figure 4-40. Connect the open end of the power connector to either of the open plugs, J5 through J10 on the DC power supply.
9. Install the side panel removed in step 2.

Rewind Option

The printer must be partially disassembled in order to install the various parts provided in this kit. Follow the procedures listed below.

1. Turn printer power OFF at the rear of the printer and disconnect the AC power cord.
2. Remove all media and ribbon from the printer.
3. Access the electronics cabinet by removing the screws in the left side panel.
4. Disconnect all wires and cables attached to the DC power supply board.
5. Inside the electronics cabinet, remove the mounting screw and two nuts which hold the DC power supply assembly in position. See Figure 4-41.

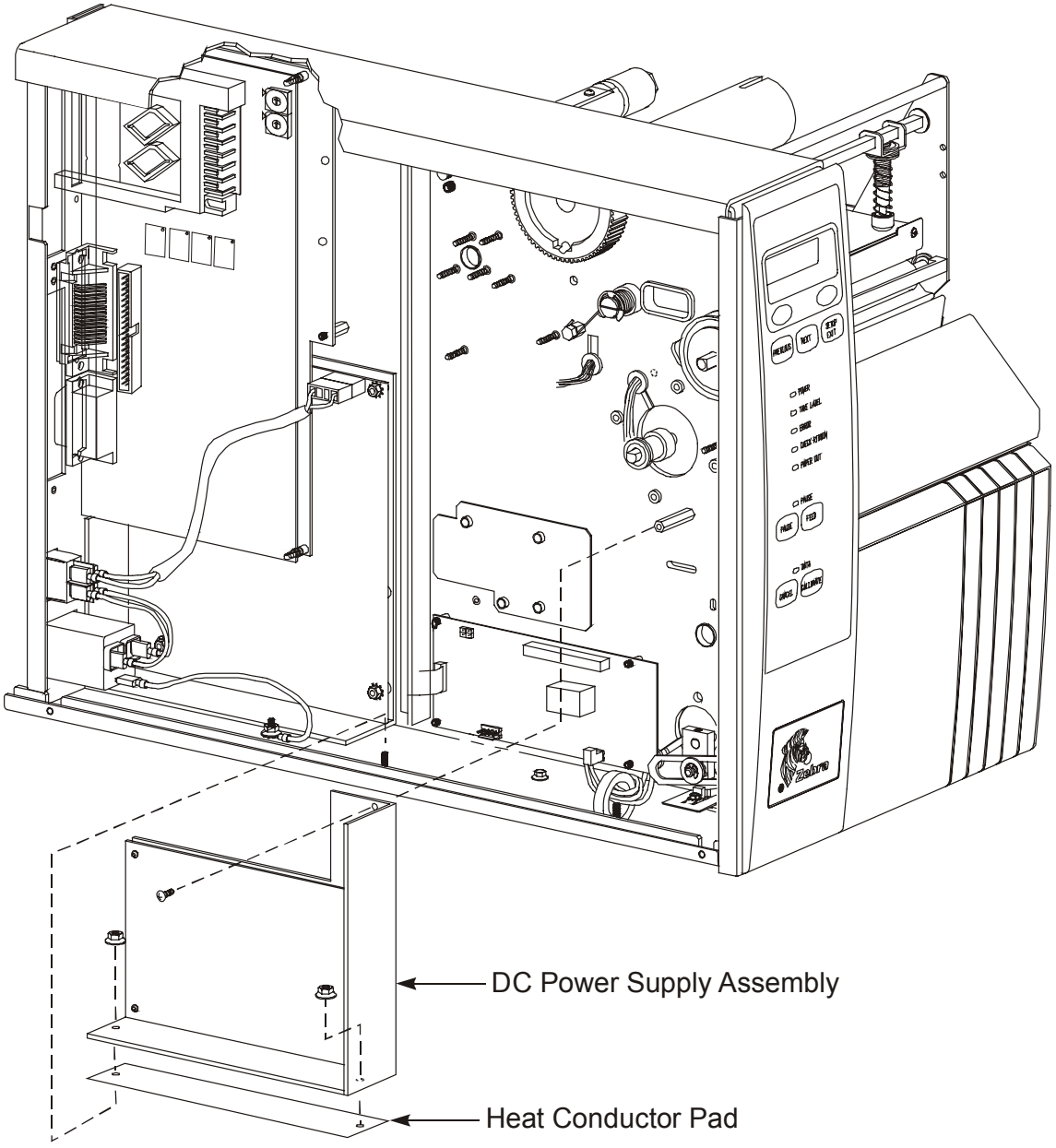


Figure 4-41 DC Power Supply

6. Remove the DC power supply assembly from the printer chassis.
7. Open the media access door, locate and remove the plastic plug in the lower access hole near the bottom of the print mechanism side plate (see Figure 4-42). Save the plug.

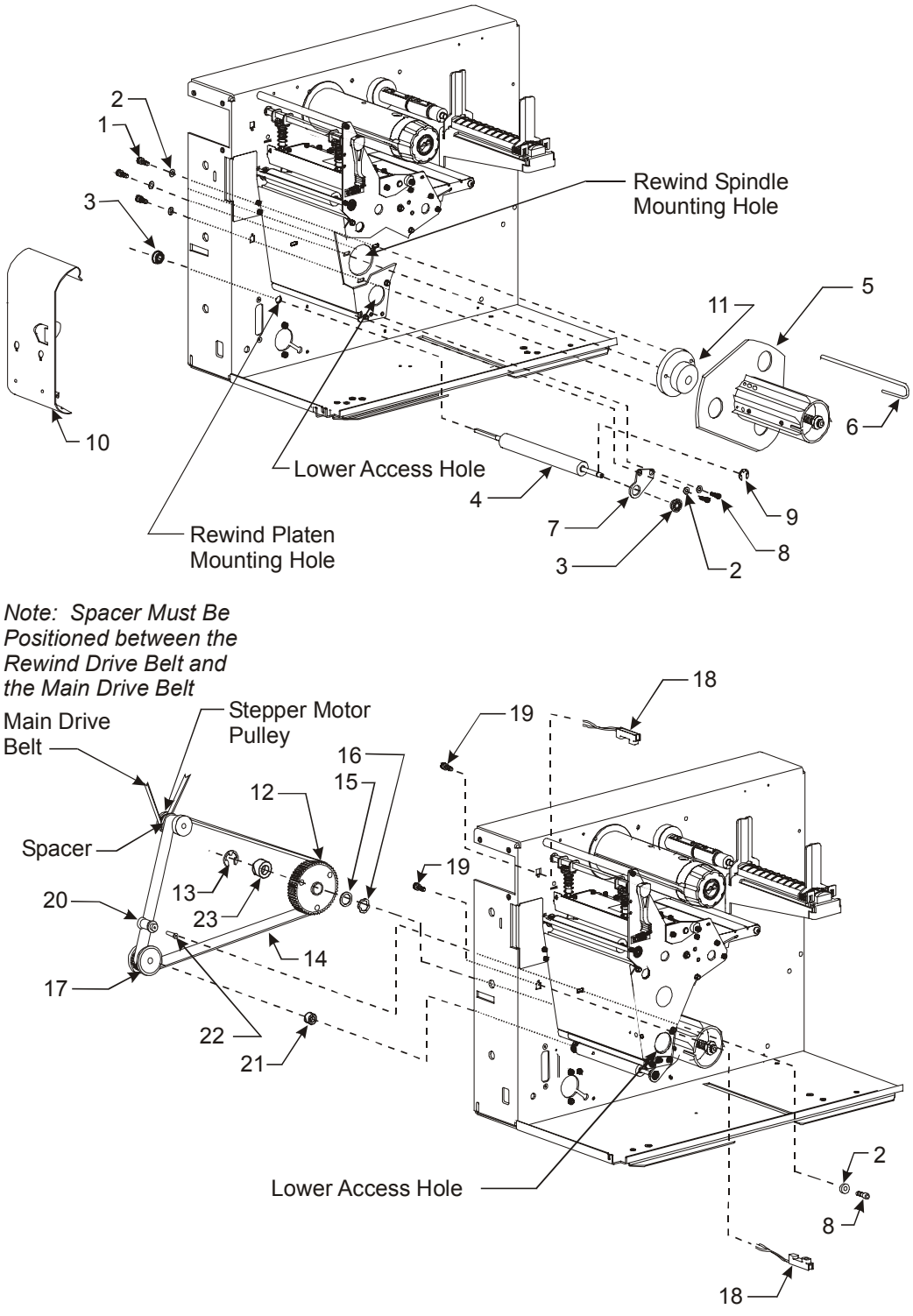


Figure 4-42 Rewind Assembly Installation

Parts List

Table 4-6 lists the parts found in the Media Rewind Option Kits. The last four columns indicate which parts are used in the particular kit for the different printers. Use Table 4-6, Figure 4-42 to do an inventory of the parts before installing the kit. The parts received are dependent on the kit ordered for a particular printer. Labels on the parts packaged in the kits may not show the "M" reorder designation shown on some of the part numbers in Table 4-5.

NOTE: Only the parts listed in Table 4-5 (with part numbers) are available as service items. Parts for the assemblies and some of the assemblies are not available (N/A) as service items.

Platen Roller Replacement Kit Part Numbers	22101M	Platen Roller Maintenance Kit (contains items 3, 4, 9 & 21 above) 220*Xi*III
	40038M	Platen Roller Maintenance Kit (contains items 3, 4, 9 & 21 above) 140*Xi*III
	46278M	Platen Roller Maintenance Kit (contains items 3, 4, 9 & 21 above) 170*Xi*III
	47601M	Platen Roller Maintenance Kit (contains items 3, 4, 9 & 21 above) 90*Xi*III

Table 4-5 Kit Numbers

✔	ITEM	QTY	PART NUMBER	DESCRIPTION	22455 220*Xi*III	46355 170*Xi*III	47355 90*Xi*III	48355 140*Xi*III
	1	3	30393-006	Screw, 8-32	X	X	X	X
	2	6	40193	Washer, Flat	X	X	X	X
	3	2	N/A	Flange Bearing (Part of Platen Roller Kits)	X	X	X	X
	4	1	N/A	Platen Roller (Part of 22101M)	X			
			N/A	Platen Roller (Part of 46278M)		X		
			N/A	Platen Roller (Part of 47601M)			X	
			N/A	Platen Roller (Part of 40038M)				X
	5	1	22155M	Rewind Spindle Assy (220*Xi*III)	X			
			46249M	Rewind Spindle Assy (170*Xi*III)		X		
			47155M	Rewind Spindle Assy (90*Xi*III)			X	
			48155M	Rewind Spindle Assy (140*Xi*III)				X
	6	1	47062-4	J-Hook (220*Xi*III)	X			
			47062-3	J-Hook (90*Xi*III)			X	
			47062-2	J-Hook (140*Xi*III)				X
			47062-1	J-Hook (170*Xi*III)		X		
	7	1	40019	Platen Support Bracket	X	X	X	X
	8	3	30392-004	Screw, 6-32	X	X	X	X
	9	1	02252	E-Ring	X	X	X	X
	10	1	22383M	Rewind Plate (220*Xi*III)	X			
			46383M	Rewind Plate (170*Xi*III)		X		
			47383M	Rewind Plate (90*Xi*III)			X	
			48383M	Rewind Plate (140*Xi*III)				X
	11	1	22334M	Bearing Housing Assy (220*Xi*III)	X			
			30334M	Bearing Housing Assy (all but 220*Xi*III)		X	X	X
	12	1	31336M	RTU/MTU Pulley Assy	X	X	X	X
	13	1	30118	E-Ring	X	X	X	X
	14	1	45189-2	Drive Belt, Rewind	X	X	X	X
	15	1	30114	Washer, Flat	X	X	X	X
	16	1	30115	Washer, Wave	X	X	X	X
	17	1	30914M	Pulley, Rewind Platen	X	X	X	X
	18	1	46609-4M	Take Label Sensors Assy	X	X	X	X
	19	2	07435	Screw 6-32	X	X	X	X
	20	1	22265	Idler Pulley (220*Xi*III)	X			
			30265	Idler Pulley (all but 220*Xi*III)		X	X	X
	21	1	N/A	Spacer (Part of Platen Roller Kits)	X	X	X	X
	22	1	22207	Idler Shaft (220*Xi*III)	X			
			30207	Idler Shaft (all but 220*Xi*III)		X	X	X
	23	1	N/A	Spacer (Part of 31336M)	X	X	X	X
	N/S	1	11301	Hex Allen Wrench, Long 7/64"	X	X	X	X

N/A – Not Available As Separate Service Item

N/S – Not Shown

Table 4-6 Media Rewind Option Kit Parts List

Installation

1. Place a flat washer (Figure 4-42, #2) onto one of the socket head cap screws (Figure 4-42, #8). Use the 7/64" allen wrench provided with this kit to place this mounting screw through the lower access hole in the side plate and through the idler pulley mounting slot in the printer main frame. On the electronics side of the printer main frame, attach the idler shaft (Figure 4-42, #22) to the mounting screw.
2. Position the idler shaft in the middle of the mounting slot and tighten the mounting screw. Apply a very small amount of grease (provided in kit) to the idler shaft with a toothpick or small screwdriver. Be very careful to keep excess grease away from other components.
3. Slide the idler pulley (Figure 4-42, #20), flat side out, onto the idler shaft.
4. In the lower center portion of the main frame, remove the cover plate from the rewind spindle mounting hole (see Figure 4-42). The cover plate and mounting screws are not reused.
5. Slide the bearing housing assembly (Figure 4-42, #11) out of the media rewind spindle assembly (Figure 4-42, #5).
6. Install the bearing housing assembly on the printer main frame using three of the socket head cap screws (Figure 4-42, #1) and three flat washers (Figure 4-42, #2). Do not tighten the screws at this time.
7. Insert the shaft of the rewind spindle (Figure 4-42, #5) through the bearing housing assembly.
8. Place the wavy washer (Figure 4-42, #16), flat washer (Figure 4-42, #15), and pulley (Figure 4-42, #12) over the rewind spindle shaft.
9. Slide the spacer (Figure 4-42, #23) on the rewind spindle shaft. Press the "E" ring (Figure 4-42, #13) into the groove in the rewind spindle shaft.
10. Attach the platen support bracket (Figure 4-42, #7) to the side plate with two (2) flat washers (Figure 4-42, #2) and two (2) socket head cap screws (Figure 4-42, #8). Do not tighten the screws at this time.
11. Remove the plastic plug from the rewind platen mounting hole near the bottom of the main frame (see Figure 4-42).
12. Insert the long end of the rewind platen shaft (Figure 4-42, #4) through the rewind platen mounting hole.
13. Place the flange bearing (Figure 4-42, #3) over the left end of the rewind platen shaft. Press the bearing into the mounting hole with the flange on the outside (left side) of the main frame.
14. Place the opposite end of the rewind platen shaft through the platen support bracket (Figure 4-42, #7).
15. Place the remaining flange bearing (Figure 4-42, #3) over the right end of the rewind platen shaft with the flange of the bearing on the outside (right side) of the platen support bracket. Press it into the mounting hole in the platen support bracket and secure with the E-Ring (Figure 4-42, #9).
16. Use a 7/64" hex allen wrench and tighten the mounting screws that secure the platen support bracket to the side plate. The bracket may need adjustment later.
17. Slide the spacer (Figure 4-42, #21) onto the rewind platen shaft.

18. Slide the rewind platen pulley (Figure 4-42, #17) onto the rewind platen shaft and align the two pulley set screws with the flat surfaces of the rewind platen shaft.
19. Leave approximately a .020 gap between the E-Ring (Figure 4-42, #9) and platen support bracket (Figure 4-42, #7) and tighten the two pulley set screws with a 1/16" hex allen wrench.
20. Position the rewind plate as shown in Figure 4-43 with the attached hook plate pointing down.
21. Insert the hook plate a short distance (1/2") into the lower opening in the side plate.
22. Align the upper end of the media rewind plate with the corresponding opening in the side plate and slide the rewind plate in so that it stops against the printer's main frame (see Figure 4-43).

Drive Belt Tension Adjustment

1. Use a 9/64" hex allen wrench to loosen, but do not remove, the three socket head cap screws that hold the ribbon take-up spindle assembly at the top of the printer main frame. Access the cap screws through the three holes in the ribbon take-up pulley.
2. Slide the ribbon take-up assembly towards the front of the printer, relieving the belt tension, and remove the main drive belt from the stepper motor pulley.
3. Route the rewind drive belt (Figure 4-42, #14) around the stepper motor pulley, media take-up pulley assembly (Figure 4-42, #12), the rewind platen pulley (Figure 4-42, #17) and the idler pulley (Figure 4-42, #20). The spacer on the stepper motor pulley must be positioned between the rewind drive belt and the main drive belt.
4. Slide the rewind assembly (Figure 4-42, #5) towards the rear of the printer until the belt (Figure 4-42, #14) tension is tight or adjustment margin is used up. Tighten the (3) socket head cap screws with a 9/64" hex allen wrench, using the (3) access holes in the media take-up pulley assembly (Figure 4-42, #12).
5. Grasp the idler pulley and shaft assembly (Figure 4-42, #20), while loosening the socket head cap screw (Figure 4-42, #8) with the long 7/64" hex allen wrench. Slide the assembly towards the rear of the printer, until belt tension is tight, then tighten the socket head cap screw.
6. Hook a spring scale at the midpoint of the lower section of the belt and pull up. The belt should deflect .250 inches with a tension of 2000 grams (4.5 lbs.). Readjust the belt tension by changing the position of the idler pulley.
7. When adjustment is completed, reinstall the plastic plug in the lower access hole (see Figure 4-42) in the print mechanism side plate.
8. Replace the main drive belt over the stepper motor pulley, platen pulley, and ribbon take-up pulley. Make sure the spacer on the stepper motor pulley is positioned to the outside of the rewind belt.
9. Slide the ribbon take-up assembly towards the rear of unit until the belt tension is tight. Tighten the (3) socket head cap screws with a 9/64" hex allen wrench using the (3) access holes in the ribbon take-up pulley.
10. Hook a spring scale at the midpoint of the belt section between the stepper motor pulley and the ribbon take-up spindle pulley and pull down to the left. The belt deflection should be .250 inches with a tension of 2000 grams (4.5 lbs.). Readjust the belt tension by changing the position of the ribbon take-up assembly.

Label Available Sensor Installation

(Do Not Install on Cutter Units)

The Take-Label Sensors are only required in the Peel-Off Mode of operation.

1. Remove the upper and lower take-label sensor cover plates by removing the two socket head cap screws with a 7/64" hex allen wrench.
2. Refer to Figure 4-43 for label sensor location. Insert the upper take-label sensor assembly (Figure 4-42, #18, black/blue wires) connector and cable through the upper take-label sensor hole in the main frame.
3. Position the sensor with the window facing directly down and use one (Figure 4-42, #19) screw to fasten the sensor in place.
4. Refer to Figure 4-43 for label sensor location. Insert the lower take-label sensor assembly (Figure 4-42, #18, black/green wires) connector and cable through the lower take-label sensor hole in the main frame.
5. Position the sensor with the window facing directly up and use one (Figure 4-42, #19) screw to fasten the sensor in place.
6. Route the wires through the cable clamps and toward the main logic board (see Figure 4-33). Make sure that the wires do not come in contact with any moving parts.
7. Connect the upper label available sensor connector to J16 on the main logic board and the lower label available sensor connector to J15 (see Figure 4-33).

NOTE: When in the "PEEL OFF" mode, if the two sensors are not aligned with each other, the take label LED will come on and the printer will not operate.

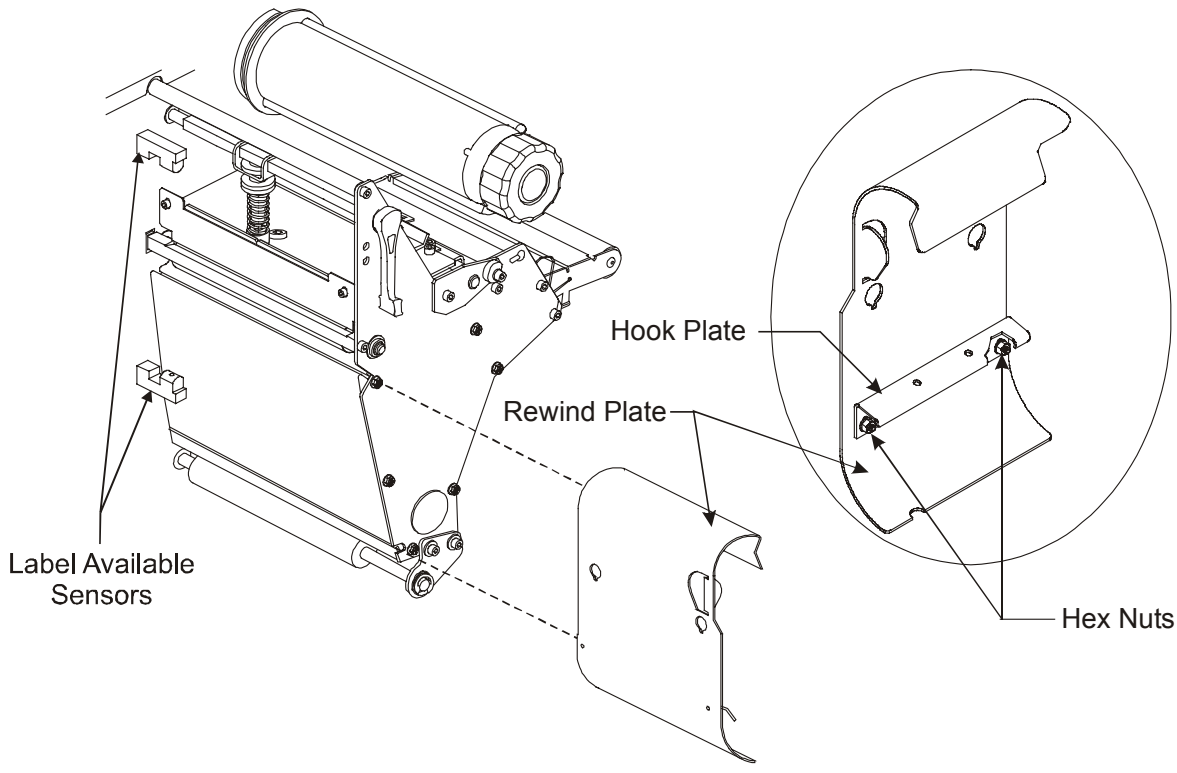


Figure 4-43 Label Available Sensor Location

Printer Reassemble

1. Install the DC power supply assembly and mounting hardware.
2. Replace the left side panel and mounting screws.
3. Reconnect the AC power cord.
4. Printer reassemble is now complete.

Adjustments

The Rewind Option Kit usually requires some adjustments to prevent printing problems such as ribbon wrinkle, non-centered labels and tearing of the media. Print a number of test labels to check for problems. Use the following procedures to correct any problems.

Rewind Mode Adjustments

Tracking Adjustment

1. If the media walks from side to side or tears or wrinkles against the backing plate on the media rewind spindle, it may be necessary to adjust the position of the rewind plate assembly mounted on the front of the printer or the rewind spindle assembly. Refer to Figures 4-43 and 4-44.
2. Remove the rewind plate assembly from the front of the printer and loosen the 5/16" Hex nuts (see Figure 4-43) which attach the hook plate to the rewind plate.

   Move the outer end of the hook plate (see Figure 4-43) up, to force the media to wind closer to the large backing plate (see Figure 4-44) on the rewind spindle, once the printer is placed back in operation.

   or

   Move the outer end down to force the media away from the backing plate.
3. Reinstall the rewind plate on the front of the printer and print a number of test labels. If problems persist, adjust the hook plate position again.
4. If the media cannot be made to track correctly after making this adjustment, check the distance from the backing plate to the main frame. This dimension is set at the factory and should be .550" (14 mm) ± .020" (.5 mm). If the distance needs to be reset, refer to Figure 4-44 and perform steps 5 and 6.
5. Use a 1/16" hex allen wrench to loosen the two set screws in the collar located inside the rewind spindle assembly near the backing plate. The set screws are accessible through a single hole in the rewind spindle assembly, as shown in Figure 4-44. Reposition the backing plate as required and retighten the set screws in the collar.
6. Perform the rewind plate assembly adjustment in steps 1 and 2 until the desired results are achieved.

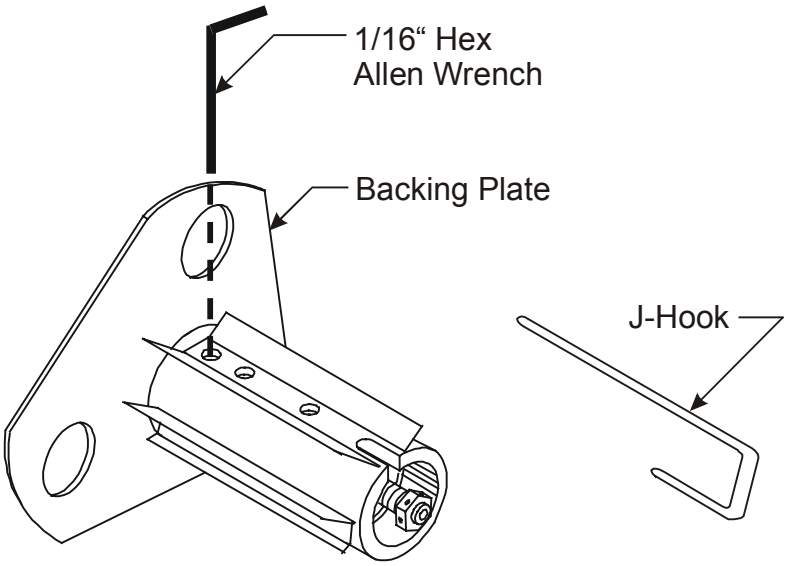


Figure 4-44 Position Adjustment of Rewind Spindle Assembly

Tension Adjustment

If the backing material is wound too tight on the spindle, it can cause mis-registration of labels, tearing, or poor print quality due to smudging. Backing material rewound too loose could jam up the printer before completing a roll, or make it impossible to separate the labels from the backing. Refer to Figure 4-45 to adjust the tension.

1. A spring scale gauge should be used to set the spindle tension. Use adhesive tape to attach a 2" wide by 30" long strip of polyester film to the spindle in the direction shown in Figure 4-45.
2. Insert the spring scale tip through the reinforced hole in the end of the strip and pull slowly and evenly (2" per second) in the direction shown. Make this measurement several times to insure an accurate reading. This tension should be approximately 1200-1400 grams.
3. If required, readjust the tension as described below and re-check the tension setting.
4. Use a 1/16" hex allen wrench to loosen the two set screws in the tension adjusting nut at the end of the rewind spindle assembly (see Figure 4-45).
5. To keep the spindle from rotating while turning the adjusting nut, insert the 1/16" hex allen wrench through the access hole at the rear of the rewind spindle into one of the set screws in the collar.
6. Refer to Figure 4-45. Turn the adjusting nut with fingers or pliers clockwise for more tension, or counter-clockwise for less tension.
7. Tighten one of the adjusting nut set screws and retest (step 2).

8. If proper tension is not achieved, loosen the set screws and readjust the adjusting nut as needed.
9. When proper tension is obtained, tighten both set screws into the adjusting nut.
10. Recheck the tension after running a full roll of labels.

NOTE: Depending on the width of the media and the thickness of the backing material, it may be necessary to deviate slightly from the recommended tension setting shown above.

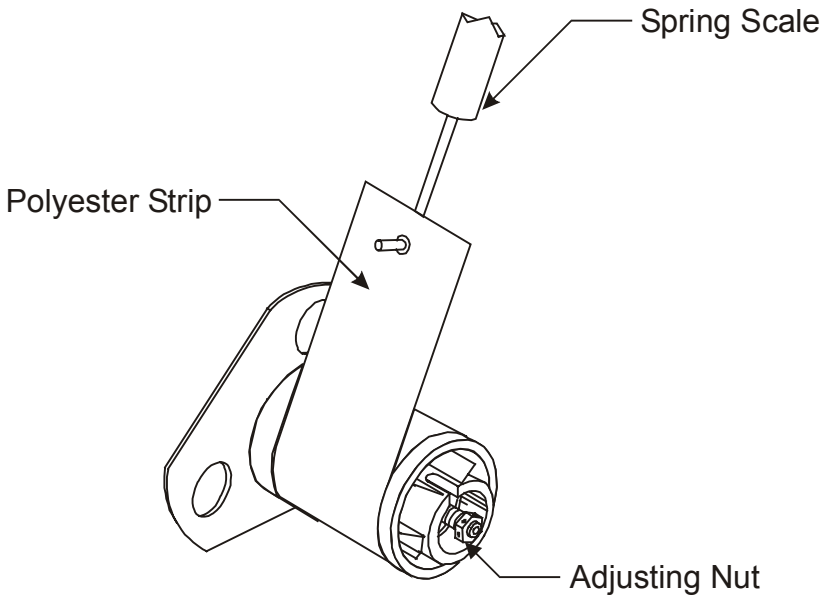


Figure 4-45 Tension Adjustment of Rewind Spindle Assembly

Peel-Off Mode Adjustments

Lower Roller Adjustment

If the media walks from side to side, it may be necessary to adjust the position of the lower roller. Refer to Figure 4-42.

1. Use a 7/64" hex allen wrench to loosen the (2) socket head cap screws (Figure 4-42, #8) which attach the platen support bracket (Figure 4-42, #7) to the side plate.
2. Moving the bracket toward the rear of the printer will force the media to wind closer to the main frame. Moving the bracket toward the front of the machine will move the media away from the Main Frame. Adjust as required and tighten the socket head cap screws.
3. Perform this adjustment until required results are achieved.

Tension Adjustment

For backing/label combinations that are particularly difficult, it may be necessary to increase rewind tension in the PEEL-OFF MODE. Follow the same tension adjustment procedures on the previous page used for the REWIND MODE ADJUSTMENTS.

Optional Interface Boards

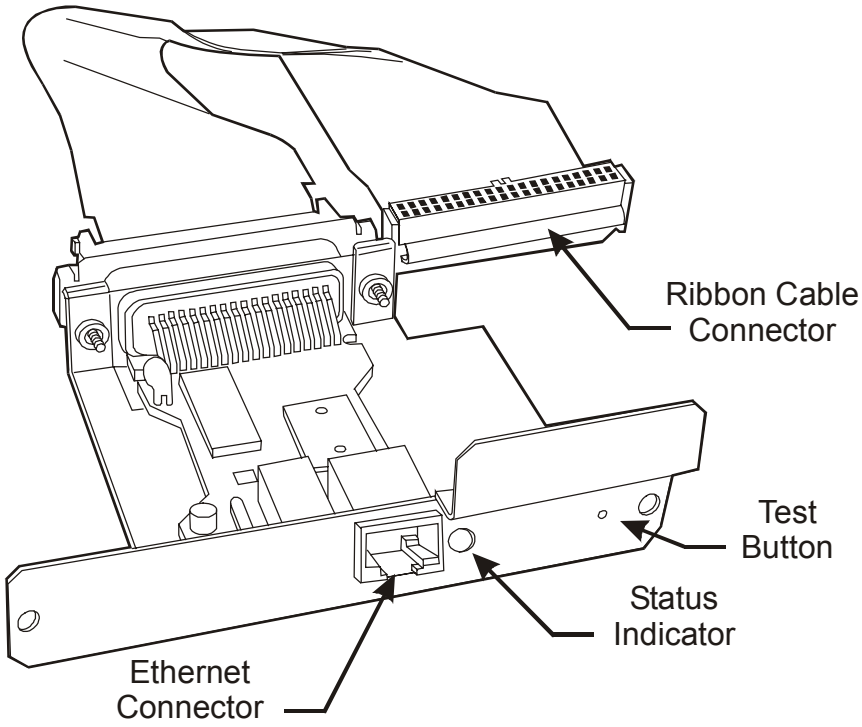


Figure 4-46 Internal PrintServer II

Test Button – This generates a detailed configuration label.

Status Indicator – A bi-colored indicator displays the state of the PrintServer II.

Ethernet Connection – Connection for a 10BaseT cable. Connecting the PrintServer II will not interrupt network operation.

Ribbon Connector – The internal PrintServer II is powered by the printer; no additional power source is required.

NOTE: To print a configuration label from your Zebra printer, a 4" wide by 6" long label is recommended. If the label is smaller, some information may print outside the label edges. If you are printing on a 90XiII or 90Xi*III*-Series printer, some of the heading information on the right side of the label will not print. Refer to Figure 4-47 for any missing data.

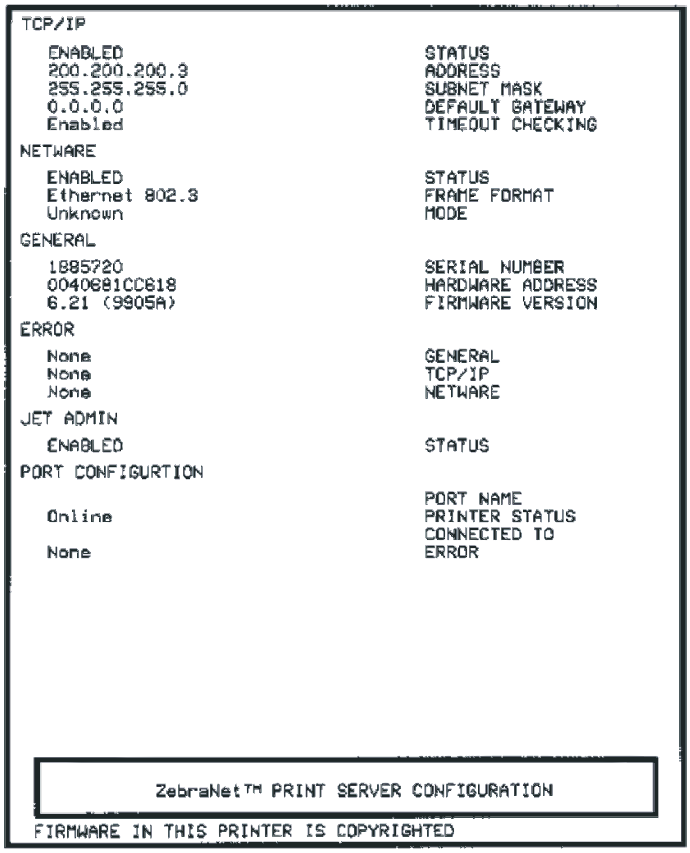


Figure 4-47 Configuration Label Internal PrintServer II

Internal PrintServer II Installation

This section provides the information necessary to install the internal PrintServer II in the Zebra , *Xi*III-Series printers. Read this section completely before performing the installation procedure.

NOTE: The parallel port on the back of the printer is not operational when the internal PrintServer II is installed. The hardware of the PrintServer II mounting bracket covers the parallel port (refer to Figure 4-49).

This installation should be performed by a qualified service technician. The service technician must follow the step-by-step procedure provided in these instructions.

After you have finished installing the PrintServer II hardware; refer to the appropriate section of this guide for information on establishing a connection for your network type.

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

1. Turn the printer power off and disconnect the AC power cord.
2. Refer to Figure 4-48 or 4-49. At the rear of the printer, remove the two screws and the blank cover plate or an existing optional interface board positioned next to the main RS-232 and parallel interface connectors.

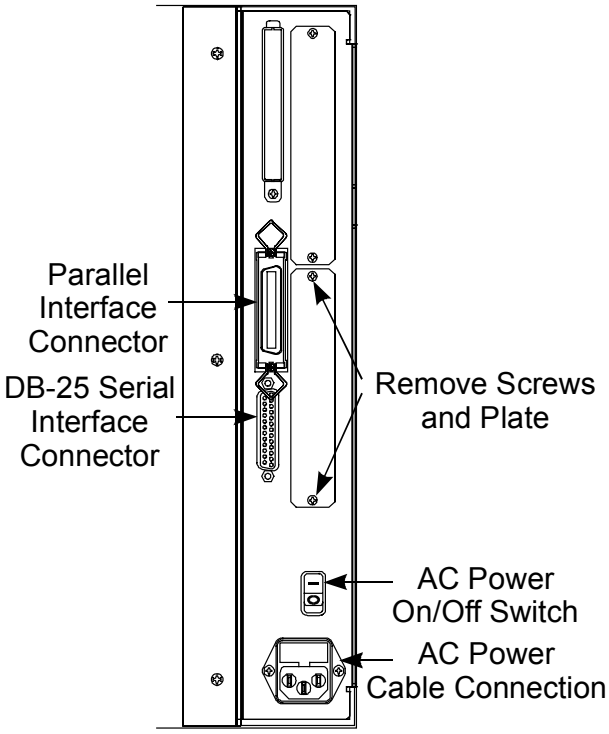


Figure 4-48 Rear View

3. Remove the left side panel.
4. Insert the ribbon cable and PrintServer II device through the mounting slot.
5. Fold the cable and the ferrite bead back over the mounting bracket (Figure 4-49), and connect the ribbon cable connector into the keyed Interface Data Cable Connector (J4) on the main logic board. Make sure the connector is properly seated and that pin 1 of the Interface Data Cable Connector is connected to pin 1 of J4.

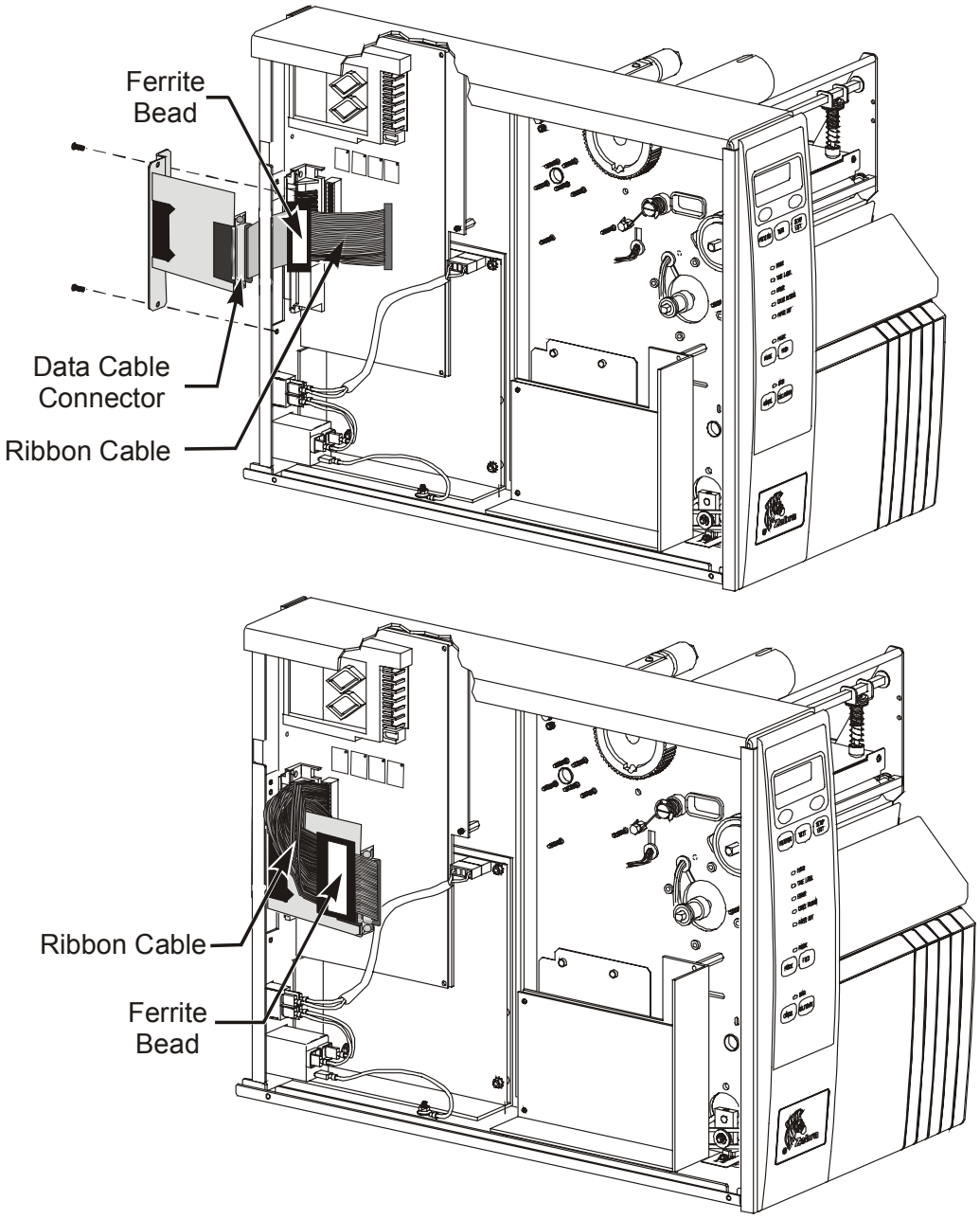


Figure 4-49 Interface Board Location

6. Fasten the PrintServer II interface board in place with the cover plate screws removed in step 2.
7. Check all small cable connectors along the back of the main logic board for firm connections. Reinstall the left side-panel.
8. This kit includes a label printed with the Ethernet MAC hardware address for the PrintServer II. Remove the backing from the label and affix it to the back of the printer.
9. Reconnect the AC power cord and turn the printer power on.
10. Consult your System Administrator before configuring the PrintServer II for your network!

External PrintServer II Installation

Hardware Description

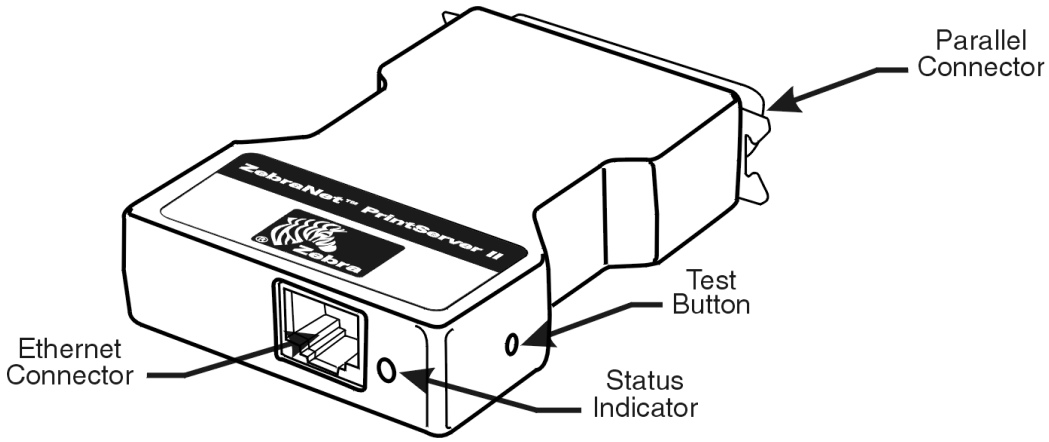


Figure 4-50 External PrintServer II

Test Button – This generates a detailed configuration label.

Status Indicator – A bi-colored indicator displays the state of the PrintServer II.

Ethernet Connection – Connection for a 10BaseT cable. Connecting the PrintServer II will not interrupt network operation.

Parallel Connector – The external PrintServer II is powered by the printer; no additional power source is required.

External PrintServer II Installation

The external ZebraNet PrintServer II is installed using the following steps:

1. Turn the printer power off. Attach the PrintServer II device directly into the parallel port on the printer. Secure the PrintServer II to the printer with the wire locks.
2. Insert an active 10BaseT cable into the Ethernet connector on the back of the PrintServer II device.
3. Turn the printer power on. The status indicator will blink orange during the POST (Power-On Self Test) phase and change to green when stabilized.
4. Press the test button located on the back of the PrintServer II. This will print out a configuration label.

NOTE: To print a configuration label from your Zebra printer, a 4" wide by 6" long label is recommended. If the label is smaller, some information may print outside the label edges. If you are printing on a 90XiIII or 90Xi*III*-Series printer, some of the heading information on the right side of the label will not print. Refer to Figure 4-47 for any missing data.

Twinax Communications Interface Boards

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

Installation Instructions

1. Turn the power OFF and disconnect the AC power cord.
2. Refer to Figure 4-51. At the rear of the printer, remove the two screws and the blank cover plate or existing interface board positioned next to the main RS-232 and parallel interface connectors. (Save the screws.)
3. To access the electronics area remove the left side panel by removing the fastening screws.

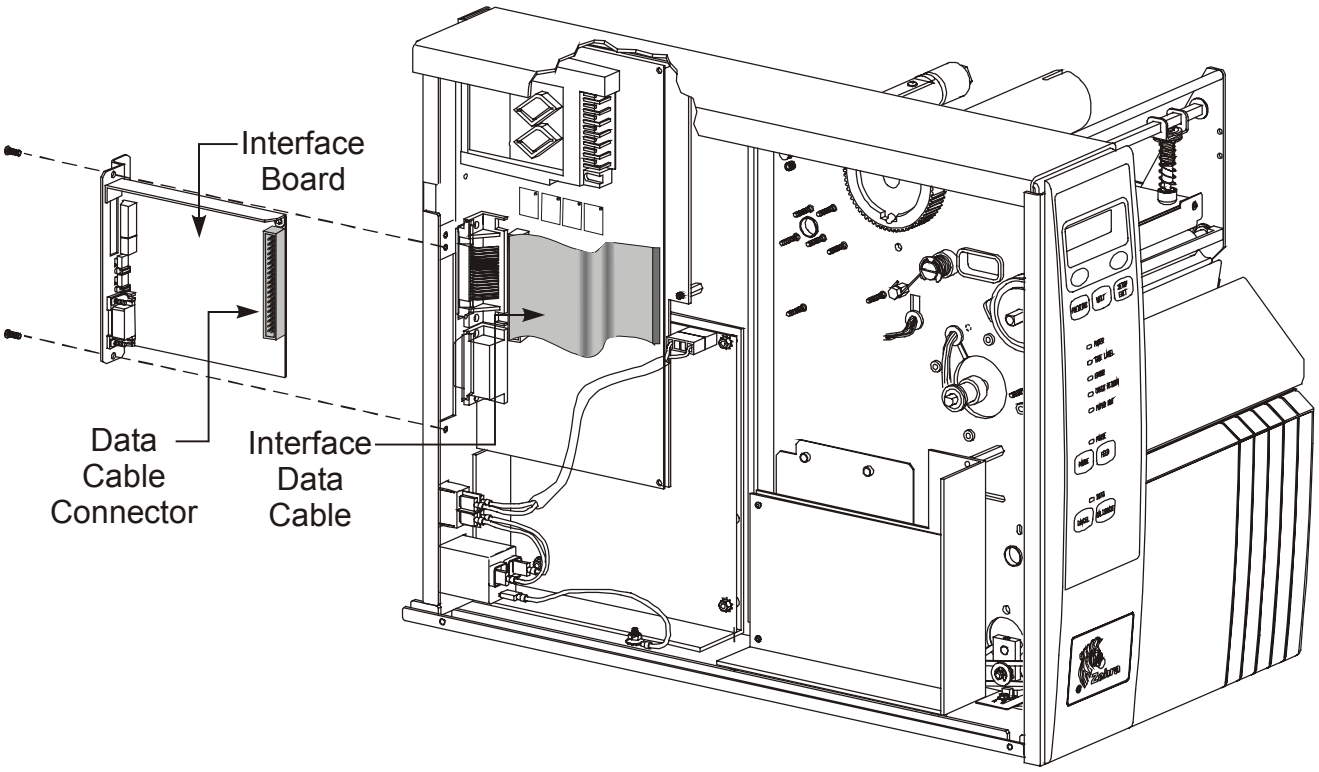


Figure 4-51 Twinax Installation

4. Refer to Figure 4-51. Plug the 40 pin interface data cable into the keyed interface data cable connector (J4) on the main logic board.
5. Insert the twinax Interface Board partially into the mounting slot then attach the other end of the interface data cable into the data cable connector at the rear of the twinax interface board. (Make sure pin 1 of J4 is connected through the cable to pin 1 of the interface data cable connector.)
6. Dress the ribbon cable behind the twinax interface board as you slide the board completely into the printer.
7. Fasten the twinax interface board in place with the screws removed in step 2; then reinstall the side cover.
8. Connect the 9-pin twinax adapter cable connector to the mating connector on the interface board.
9. Connect the twinax cable from the host computer to the mating connector on the adapter cable.
10. Set the DIP switches in the proper positions for the application; see Table 4-7 then reconnect the power cord and turn the AC power on.
11. Insure the printer configuration is set to:

Parameter	Setting
Host Port	Twinax/Coax

12. Send a sample label format from the host computer to the printer to test for proper operation.

Dip Switch Setting				
Print complete				
Switch #1	**Description**			
Left	An "Operation Complete" status message is sent to the host after a label format is completely printed. The host can then send the next label format to be printed.			
Right	Enables the "Early Print Complete" function. The host can send additional print jobs to the Zebra printer without waiting for the actual completion of the current print job. The printing status sent to the host reflects the label formats received, not the ones completed.			
EBCDIC Buffer Print				
Switch #2	**Description**			
Left	Normal operation (received EBCDIC data is translated to ASCII Data).			
Right	Received EBCDIC data prints as large characters that are readable hex equivalents.			
Printer Emulation Selections				
Switch #3	**Switch #4**	**IBM Printer Configured**		
Left	Left	5256 Model 3		
Left	Right	5225 Model 4		
Right	Left	5224 Model 2		
Right	Right	4212 Model 2		
Default Language Selections				
Switch #5	**Switch #6**	**Switch #7**	**Switch #8**	**Language Selected**
Left	Left	Left	Left	0 -Multinational
Left	Left	Left	Right	1 - USA/Canada (Factory setting)
Left	Left	Right	Left	2 - Austria/Germany
Left	Left	Right	Right	3 - Belgium
Left	Right	Left	Left	4 - Brazil
Left	Right	Left	Right	5 - Canada (French)
Left	Right	Right	Left	6 - Denmark/Norway
Left	Right	Right	Right	7 - Finland/Sweden
Right	Left	Left	Left	8 - France
Right	Left	Left	Right	9 - Italy
Right	Left	Right	Left	A - Japan
Right	Left	Right	Right	B -Japan (English)
Right	Right	Left	Left	C - Portugal
Right	Right	Left	Right	D - Spain
Right	Right	Right	Left	E - Spanish Speaking
Right	Right	Right	Right	F - United Kingdom
NOTE: The language character sets 1 - US/Canada and B - Japan (English) are the same. The character sets for D - Spain and E - Spanish Speaking are the same.				

Table 4-7 Dip Switch Settings

Dip Switch Setting (cont'd)			
Cable Address Switch Settings			
Switch #9	Switch #10	Switch #11	Address Selected
Left	Left	Left	0 – (Factory Setting)
Left	Left	Right	1
Left	Right	Left	2
Left	Right	Right	3
Right	Left	Left	4
Right	Left	Right	5
Right	Right	Left	6
Right	Right	Right	7 – (Use in Diagnostic Mode Only)
Star Panel Overdrive			
Switch #12	Description		
Left	Normal Operation		

Table 4-7 Dip Switch Settings (cont'd)

After setting the DIP switches, turn the printer power OFF and back ON. With the exception of DIP switch #2, the printer monitors the positions of the DIP Switches only during the Power-On Self Test.

The EBCDIC Buffer Print function is enabled whenever DIP Switch #2 is placed in the “Right” position.

Coax Communications Interface Boards

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

Installation Instructions

1. Turn the power Off and disconnect the AC power cord.
2. Refer to Figure 4-52. At the rear of the printer, remove the two screws and the blank cover plate or existing interface board positioned next to the main RS-232 and parallel interface connectors. (Save the screws.)
3. To access the electronics area, remove the left side panel by removing the fastening screws.

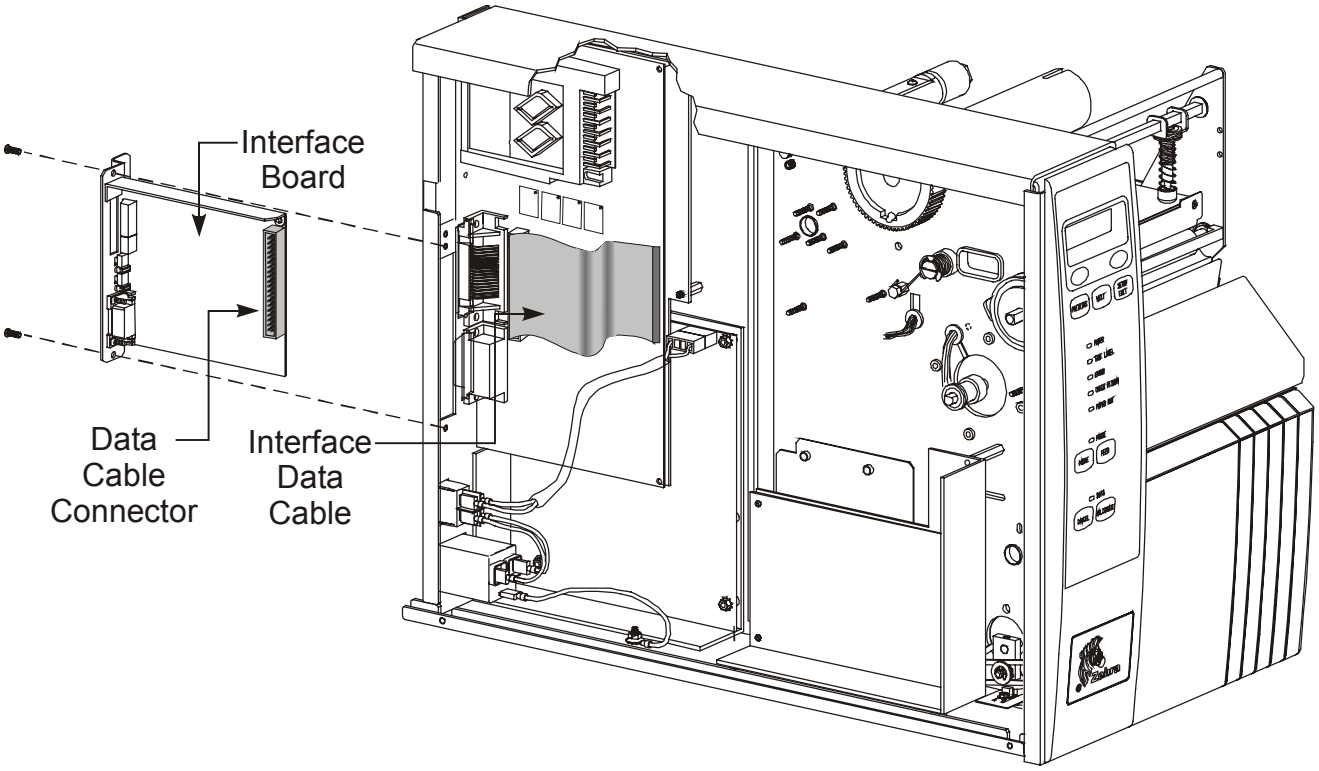


Figure 4-52 Coax Communications Interface Board Installation

4. Refer to Figure 4-52. Plug the 40 pin interface data cable into the keyed interface data cable connector (J4) on the main logic board.
5. Insert the coax interface board partially into the mounting slot then attach the other end of the interface data cable into the data cable connector at the rear of the coax interface board. (Make sure pin 1 of J4 is connected through the cable to pin 1 of the interface data cable connector.)
6. Dress the ribbon cable behind the coax interface board as you slide the board completely into the printer.
7. Fasten the coax interface board in place with the screws removed in step 2; then reinstall the side cover.
8. Connect the 9-pin coax adapter cable connector to the mating connector on the interface board.
9. Connect the coax cable from the host computer to the mating connector on the adapter cable.
10. Set the DIP switches in the proper positions for the application, refer to Table 4-8, then reconnect the power cord and turn the AC power on.
11. Insure the printer configuration is set to:

Parameter	Setting
Host Port	Twinax/Coax

12. Send a sample label format from the host computer to the printer to test for proper operation.

Dip Switch Setting				
Test Mode				
Switch #1	**Description**			
Left	Normal label printing operation.			
Right	When printer power is applied, the coax interface performs a self-test. A self test label printout lists the coax interface software revision, the selected language, results of the RAM/ROM tests and a sample code 39 bar code.			
EBCDIC Buffer Print				
Switch #2	**Description**			
Left	Normal operation (received EBCDIC data is translated to ASCII Data).			
Right	Received EBCDIC data prints as large characters which are readable hex equivalents. Use only for troubleshooting with the printer in the "Diagnostics" mode.			
Default Language Selections				
Switch #3	Switch #4	Switch #5	Switch #6	Language Selected
Left	Left	Left	Left	0 -Multinational
Left	Left	Left	Right	1 - USA/Canada (Factory setting)
Left	Left	Right	Left	2 - Austria/Germany
Left	Left	Right	Right	3 - Belgium
Left	Right	Left	Left	4 - Brazil
Left	Right	Left	Right	5 - Canada (French)
Left	Right	Right	Left	6 - Denmark/Norway
Left	Right	Right	Right	7 - Finland/Sweden
Right	Left	Left	Left	8 - France
Right	Left	Left	Right	9 - Italy
Right	Left	Right	Left	A - Japan
Right	Left	Right	Right	B -Japan (English)
Right	Right	Left	Left	C - Portugal
Right	Right	Left	Right	D - Spain
Right	Right	Right	Left	E - Spanish Speaking
Right	Right	Right	Right	F - United Kingdom
NOTE: The language character sets 1 - US/Canada and B - Japan (English) are the same. The character sets for D - Spain and E - Spanish Speaking are the same.				
Intervention Required Message				
Switch #7	**Description**			
Left	Inhibits the sending of the "Intervention Required" (IR) status message.			
Right	When a printer error condition is monitored by the coax interface for a period of at least 10 minutes, an "Intervention Required" (IR) status message is sent to the host.			

Table 4-8 Dip Switch Settings Coax Interface

Dip Switch Setting (cont'd)		
Early Print Complete		
Switch #8	**Description**	
Left	An "Operation Complete" status message is sent to the host after a label format is completely printed. The host can then send the next label format to be printed.	
Right	Enables the "Early Print Complete" function. The host can send additional print jobs to the printer without waiting for the actual completion of the current print job. The printing status sent to the host reflects the label formats received, not the ones completed.	
Buffer Size Selection		
Switch #9	**Switch #10**	**Description**
Left	Left	3564 Byte buffer
Left	Left	3440 Byte buffer
Left	Right	1920 Byte buffer
Left	Right	960 Byte buffer
Switch #11	Not Active	
Switch 12	Not Active	

Table 4-8 Dip Switch Settings Coax Interface (cont'd)

After setting the DIP switches, turn the printer power OFF and back ON. With the exception of DIP switch #2, the printer monitors the positions of the DIP Switches only during the Power-On Self Test.

The EBCDIC Buffer Print function is enabled whenever DIP Switch #2 is placed in the “Right” position.

APPLICATOR INTERFACE PORT/REAL TIME CLOCK

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

1. Turn the printer power Off and disconnect the AC power cord.
2. Remove the left side panel by loosening the mounting screws.
3. Refer to Figure 4-53 and remove the two screws and the blank cover plate (or the interface board and cables) installed next to the PCMCIA memory card slot. (Save the screws.)

NOTE: There are two interface data cables that need to be attached from the RTC/applicator circuit board to the main logic board if the applicator interface and the RTC are to work at the same time. J1 on RTC board connects the RTC and J4 connects the applicator interface.

4. Attach the DC power cable to J5 on the RTC/Applicator circuit board then connect one or both interface data cables to J1 and J4 as needed.
5. Refer to Figure 4-53, insert the RTC/Applicator circuit board and cables partially into the mounting slot. Then connect the other end of the interface data cables to one of the open serial data connectors on the main logic board and the DC power cable to one of the open connectors on the DC power supply board.
6. Slide the RTC/applicator circuit board completely into the mounting slot, and fasten it in place with the two screws removed in step 3.
7. Reinstall the left side panel.
8. Attach the AC power cord then turn the printer power on.
9. Configure the real time clock parameters according to info on next page; then send a sample label format from the host computer to the printer to test for proper operation.

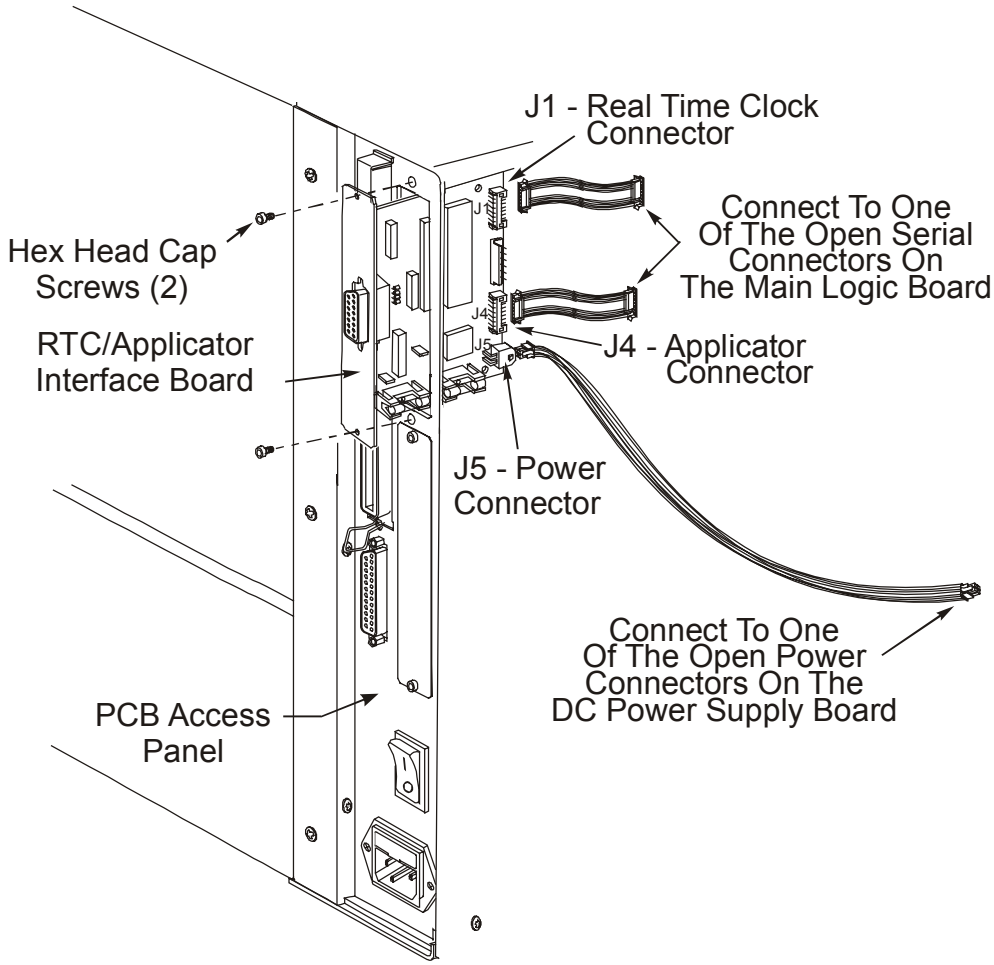

J1 - Real Time Clock Connector
Connect To One Of The Open Serial Connectors On The Main Logic Board
Hex Head Cap Screws (2)
RTC/Applicator Interface Board
J4 - Applicator Connector
J5 - Power Connector
Connect To One Of The Open Power Connectors On The DC Power Supply Board
PCB Access Panel

Figure 4-53 Applicator/Real Time Clock Installation

Real Time Clock Parameters

The following parameters are added to the Front Panel Configuration prompts only when the Real Time Clock hardware is installed in the *Xi*III-Series printer.

Idle Display

Selects the printer's Idle Display format and the method of displaying the time/date information. This parameter also affects the Configuration Label printout and the **SET DATE** and **SET TIME** formats.

Selections:

FW VERSION	MM/DD/YY 24HR	MM/DD/YY 12HR
DD/MM/YY 24HR	DD/MM/YY 12HR	

If FW VERSION is selected, the format on the Configuration Label and on the **SET DATE**

SET TIME

Allows entry of the RTC time in the format selected by the **IDLE DISPLAY** parameter.

Use the Left Oval Key to select the position to be adjusted. Then use the Right Oval Key to select the correct value for that position.

SET DATE

Allows entry of the RTC date in the format selected by the **IDLE DISPLAY** parameter.

Use the Left Oval Key to select the position to be adjusted. Then use the Right Oval Key to select the correct value for that position.

Real Time Clock Commands

General Information on the use of real time clock (RTC)

NOTE: The ZPL II commands for the RTC are only applicable if the option is installed in the printer.

The Field Clock (**^FC**) command is used to specify the clock-indicator character for the primary, secondary, and tertiary clocks. This command must be included within each label field command string whenever the date or time clock values are required within the field. No date or time clock information can be printed in a label field unless this command is included.

A clock indicator can be any printable character except the ZPL II Format Prefix, Control Prefix, or Delimiter characters. The default value for the primary clock-indicator is the percent sign (%). The secondary and tertiary clock indicators have no defaults and must be specified in order for that clock to be used.

The ZPL II Field Data (**^FD**) command has been expanded to recognize the clock indicators and associated command characters, and to replace them during the printing process with the corresponding time or date parameter. For example, if the primary clock indicator is the percent sign (%), then during printing, the character sequence **%H** in the **^FD** statement would be replaced by the 2-digit current hour.

NOTE: If the Real Time Clock hardware is not installed, or the ^FC command has not preceded the ^FD statement, no replacement would occur. In this case, the characters "%H" would print as text on the label.

The name of the day of the week, the name of the month, and the AM or PM designation can also be inserted in place of a specific clock indicator/command character sequence. See Table 4-9 for the list of command characters and their functions.

The Set Offset (**^SO**) command permits the printing of specific times and dates relative to the primary clock. The secondary (or tertiary) clock is enabled when secondary (or tertiary) offsets are entered using this command. The secondary (or tertiary) clock time and date are determined by adding the offsets to the current clock reading.

One **^SO** command is required to set the secondary offset and an additional **^SO** command is required for a tertiary offset. The offsets remain until changed or until the printer is either powered down or reset.

NOTE: Only dates from January 1, 1998 to December 31, 2097 are supported. Setting the offsets to values that result in dates outside this range is not encouraged or guaranteed.

The Set Mode/Language (**^SL**) command is used to select the language in which to print the names of the days of the week, and the names of the months. This command also sets the printing mode, which can be 'S' for START TIME or 'T' for TIME NOW. In START TIME mode, the time printed on the label is the time that is read from the Real Time Clock when the label formatting begins (when the **^XA** command is received by the printer). In TIME NOW mode, the time printed on the label is the time that is read from the Real Time Clock when the label is placed in the queue to be printed.

%a is replaced by the abbreviated weekday name
%A is replaced by the weekday name
%b is replaced by the abbreviated month name
%B is replaced by the month name
%d is replaced by the day of the month number, 01 to 31
%H is replaced by the hour of the day (military), 00 to 23
%I is replaced by the hour of the day (civilian), 01 to 12
%j is replaced by the day of the year, 001 to 366
%m is replaced by the month number, 01 to 12
%M is replaced by the minute, 00 to 59
%p is replaced by the AM or PM designation
%S is replaced by the seconds, 00 to 59
%U is replaced by the week# of the year, 00 to 53, Sunday is 1st day
%W is replaced by the week# of the year, 00 to 53, Monday is 1st day
%w is replaced by the day # of the week, 00 (Sunday) to 06 (Saturday)
%y is replaced by the last 2 digits of the year, 00 to 99
%Y is replaced by the full 4 digit year number
– where % is the specified clock indicator character

Table 4-9 Date & Time Command Characters

Time and Date Precision (in Time Now Mode)

The time and date placed in a label field is determined at the time the label bitmap is created by the printer. If a batch of labels is formatted, the date and time will be the same for all labels in the batch. If the printer is PAUSED during the printing process and remains

in that state for a period of time, when printing resumes, the time and date will still be the same as when the batch was first started.

If more precise time and date stamps are required on the labels, the **^CO** (Cache On) ZPL II command can be used to limit the memory available for label bitmaps and thus reduce the number of labels containing the same time and date stamp. To determine the value for the "b" parameter of the **^CO** command, perform the steps that follow:

NOTE: Please cycle the printer power off and on to clear the memory before performing the steps below.

1) Print a Memory Usage Label (**^XA^WD*:*.*^XZ**) and note the following value:

   Available RAM (in BYTES) (A) _____

2) Print a Configuration Label and note these values:

   Printer "Print Width" (in DOTS) (NOT the Label Width)

   (B) _____

   Label Length (in DOTS) (C) _____

3) Determine the desired maximum number of queued labels with the same Time and Date value. (D) _____

NOTE: Increasing the number of queued labels will improve throughput performance, but Real Time Clock values will be less accurate. Two is usually an appropriate compromise.

4) Substitute the values for B through D from the previous page into the following formula:

   The "label queue" memory required (in BYTES)

   (B x C x D) / 8 = (E) _____

5) Substitute the values for A and E into the following formula:

   The "**^CO** command" memory required (in KBYTES)

   ((A – E) / 1024) – 5 = (F) _____

NOTE: If the value of (F) is less than zero, then no ^CO command is needed. If the value of (F) is greater than zero, use the integer portion in the ^CO command.

EXAMPLE

Available RAM	(A) = 714748 BYTES
Print Width	(B) = 832 DOTS
Label Length	(C) = 1000 DOTS
Max Labels Queued	(D) = 2
The "label queue" memory required (B x C x D) / 8	(E) = 208000 BYTES
The "**^CO** command" memory required ((714748 – 208000) / 1024) – 5	(F) = 489.87 KBYTES

Therefore, the correct **^CO** command string to add to the label format would be:

^XA^COY,489^XZ

This command string will cause 489 KBYTES to be set aside as Font Memory and make it unavailable as label format memory. The memory remaining will only allow two labels to be formatted at one time, and the time and date will be more precise for those two labels.

^KD Date/Time Format

The **^KD** (Date/Time Format) instruction is used to select the format in which the Real Time Clock's date and time information is printed on a configuration label.

The format for the **^KD** instruction is:

^KDa

Where

^KD = Date/Time Format

a = Value indicating desired date/time format

0 = Normal version number string (Default)
1 = MM/DD/YY w/24 hour clock
2 = MM/DD/YY w/12 hour clock
3 = DD/MM/YY w/24 hour clock
4 = DD/MM/YY w/12 hour clock

NOTE: If the Real Time Clock hardware is not present, the display mode will be set to "Version Number".

NOTE: If the display mode is set to "Version Number" and the Real Time Clock hardware is present, the date/ time format shown on the configuration label when setting the date/time will be in the format: MM/DD/YY with a 24 hour clock.

^FC FIELD CLOCK

The **^FC** (Field Clock) instruction is used to set the clock-indicators (delimiters) and the clock mode, for use with the Real Time Clock hardware. This command must be included within each label field command string each time the Real Time Clock values are required within the field.

The format for the **^FC** instruction is:

^FCa,b,c

Where

^FC = Field Clock

a = Primary clock indicator character
Default = %

b = Secondary clock indicator character
No Default – cannot be the same as "a" above

c = Tertiary clock indicator character
No Default – cannot be the same as "a" or "b" above

NOTE: If no Real Time Clock hardware is present, this command is ignored.

^SL SET MODE/LANGUAGE

The **^SL** (Set Mode/Language) instruction is used to specify the language in which Real Time Clock information is printed and to specify the mode of operation for the Real Time Clock.

NOTE: The ^SL command must be placed in front of the first time field ^FO command.

The format for the **^SL** instruction is:

^SLa,b

Where

^SL = Set Mode/Language

a = Mode
S = START TIME mode (Default)
T = TIME NOW mode

b = Language Number
(Default = The language selected via the ^KL instruction)

1 = English	4 = German	7 = Portuguese	10 = Spanish 2
2 = Spanish	5 = Italian	8 = Swedish	11 = Dutch
3 = French	6 = Norwegian	9 = Danish	12 = Finnish

^SO SET OFFSET

The **^SO** (Set Offset) instruction is used to set the secondary offset and the tertiary offset from the primary Real Time Clock.

The format for the **^SO** instruction is:

^SOa,b,c,d,e,f,g

Where

^SO = Set Offset

a = Clock (No Default)
2 = Secondary Clock
3 = Tertiary Clock

b = Months Offset (Default = 0) (Range –32,000 to +32,000)

c = Days Offset (Default = 0) (Range –32,000 to +32,000)

d = Years Offset (Default = 0) (Range –32,000 to +32,000)

e = Hours Offset (Default = 0) (Range –32,000 to +32,000)

f = Minutes Offset (Default = 0) (Range –32,000 to +32,000)

g = Seconds Offset (Default = 0) (Range –32,000 to +32,000)

^ST SET DATE/TIME

The **^ST** (Set Date/Time) instruction is used to set the date and time of the Real Time Clock.

The format for the **^ST** instruction is:

^STa,b,c,d,e,f,g

Where

^ST = Set Date/Time

a = Month (Default = Current Month) Valid Range = 01 to 12

b = Day (Default = Current Day) Valid Range = 01 to 31

c = Year (Default = Current Year) Valid Range = 1998 to 2097

d = Hour (Default = Current Hour) Valid Range = 00 to 23

e = Minute (Default = Current Minute) Valid Range = 00 to 59

f = Second (Default = Current Second) Valid Range = 00 to 59

g = Format
A = AM
P = PM
M= 24 Hour (Military) (Default)

Sample ZPL

The ZPL II scripts shown below establish the initial settings for the date and time clock and must be sent to a printer to provide proper date and time parameters for the ZPL II script on the following page.

Setting the date and time for the Real Time Clock only needs to be done once. An on-board battery maintains the date and time when the printer is reset and when the printer power is turned OFF.

To set the date and time to April 23, 1999 at 2:30 PM the following command string should be sent to the printer:

^XA

^ST04,23,1999,02,30,0,P^FS

^XZ

To initialize the Real Time Clock and set up two offset values (offset #2 set to 3 months and 1 hour in the future, offset #3 set to 1 year in the past), the following command sequence should be sent to the printer:

^XA

^SL

^SO2,3,0,0,1,0,0^FS

^SO3,0,0,-1,0,0,0^FS

^XZ

The following script references the initial settings (from above) to provide the output shown in Figure 4-54. It also illustrates the various methods of printing the date and time initialized on the previous page within separate fields on continuous media. For the below example, the **^FC** command delimiters are:

% Primary clock indicator

{ Secondary clock indicator

Tertiary clock indicator

^XA

^LL175

^FO10,025^AD^FC%,{,#^FD1: Mil: %H:%M:%S Civ: %I:%M:%S %p^FS

^FO10,050^AD^FC%,{,#^FD2: Mil: {H:{M:{S Civ: {I:{M:{S {p^FS

^FO10,075^AD^FC%,{,#^FD3: Mil: #H:#M:#S Civ: #I:#M:#S #p^FS

^FO10,100^AD^FC%,{,#^FD1: On %A, %B %d, %Y (%a, %m/%d/%y, %d %b %Y).^FS

^FO10,125^AD^FC%,{,#^FD2: On {A, {B {d, {Y ({a, {m/{d/{y, {d {b {Y).^FS

^FO10,150^AD^FC%,{,#^FD3: On #A, #B #d, #Y (#a, #m/#d/#y, #d #b #Y).^FS

^XZ

```
1: Mil: 14:30:00 Civ: 02:30:00 PM
2: Mil: 15:30:00 Civ: 03:30:00 PM
3: Mil: 14:30:00 Civ: 02:30:00 PM
1: On Friday, April 23, 1999 (Fri, 04/23/99, 23 Apr 1999).
2: On Friday, July 23, 1999 (Fri, 07/23/99, 23 Jul 1999).
3: On Thursday, April 23, 1998 (Thur, 04/23/98, 23 Apr 1998).
```

Figure 4-54 Printed Result of the Example ZPL II Script

Cutter Option Kit

Adding the Cutter Option to this printer requires the installation of several parts and assemblies and should be performed by a qualified Service Technician.

The service technician must follow all of the step-by-step procedures provided in these instructions.

Cutter Option Kit Parts List

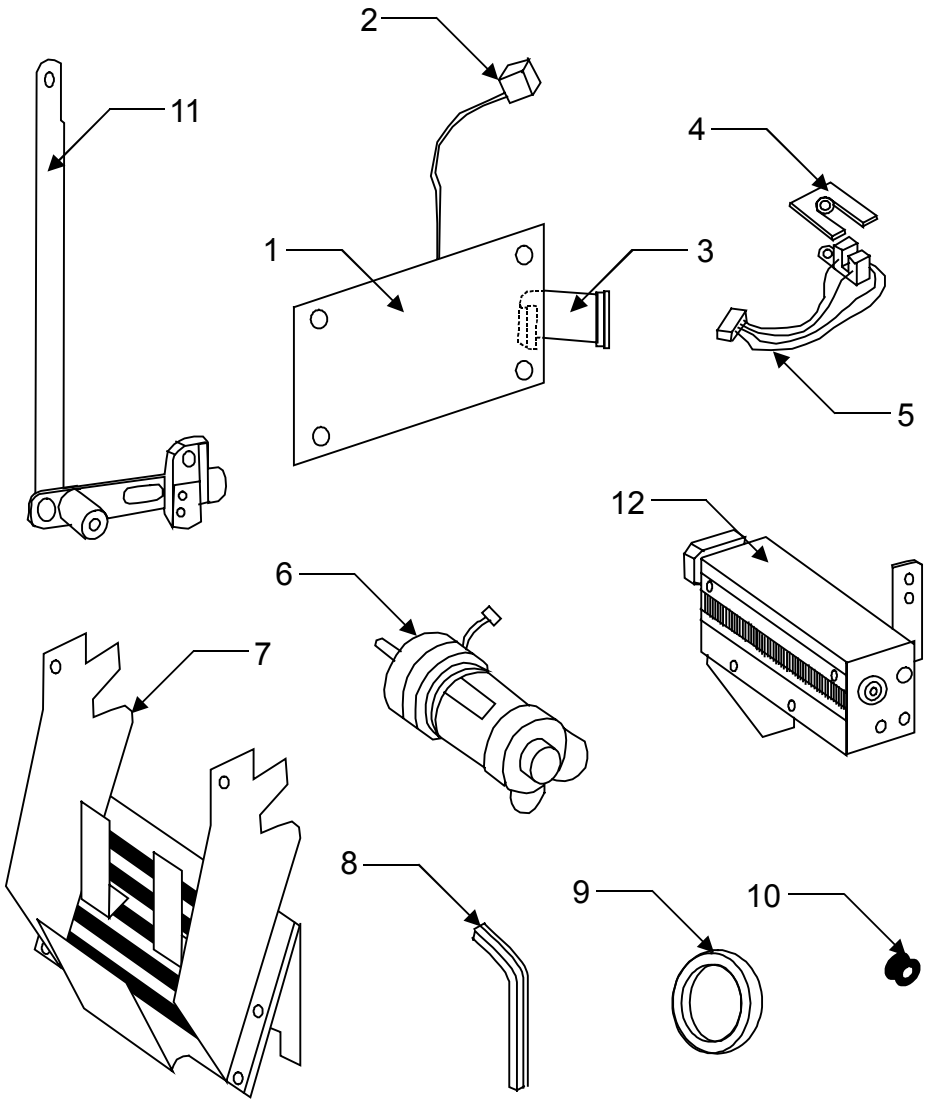
✔	Item #	Qty	Part Number	Description	90/96 *Xi*III	140 *Xi*III	170 *Xi*III	220 *Xi*III
	1	1	49730M	Cutter Option Circuit Board	X	X	X	X
	2	1	49604-010	Cutter Power Cable	X	X	X	X
	3	1	49600-012	Cutter Data Cable	X	X	X	X
	4	1	30313	Sensor Clamp	X	X	X	X
	5	1	46618M	Cutter Optical Sensor Assembly	X	X	X	X
	6	1	30374M	Cutter Motor Assembly	X	X	X	X
	7	1	22459	Cutter Catch Tray Kit 220 *Xi*III				X
		1	46459	Cutter Catch Tray Kit 170 *Xi*III			X	
		1	47459	Cutter Catch Tray Kit 90 *Xi*III	X			
		1	48459	Cutter Catch Tray Kit 140 *Xi*III		X		
	8	1	30449	Hex Allen Key, 5/64”	X	X	X	X
	9	1	44632	Ferrite Core	X	X	X	X
	10	1	46224	Grommet	X	X	X	X
	11	1	N/A	Drive Link Assembly	X	X	X	X
	12	1	N/A	Cutter Mechanical Assembly	X	X	X	X
	13	2	30394-005	Screws (Motor Mounting)	X	X	X	X
	14	6	30392-004	Screw 6-32	X	X	X	X
	15	4	30391-003	Screw 4-40	X	X	X	X
	16	1	02133	E-Ring	X	X	X	X
	17	1	01822	Nut	X	X	X	X
	18	1	01155	#4 Lock Washer	X	X	X	X

N/A = Not Available as a separate part (listed for identification purposes only)

NOTE: Only the parts listed above (with part numbers) are available as service items. Parts for the assemblies and some of the assemblies are not available as service items.

NOTE: Cutter option not available on 96XiIII.

Table 4-10 Cutter Option Kit Parts List



The lock washer, nut, E-ring and screws are not shown here (see Table 4-10)

Figure 4-55 Part Identification Cutter Option

CAUTION:

THE PRINTER ELECTRONICS ARE SUSCEPTIBLE TO STATIC DISCHARGE. BEFORE PROCEEDING, IT IS RECOMMENDED THAT THE TECHNICIAN WEAR AN ANTI-STATIC WRIST STRAP CONNECTED TO THE PRINTER CHASSIS.

Printer Disassembly

The printer must be partially disassembled in order to install the parts in this kit.

1. Turn the printer off and remove the power cord and the printer communications cable (if connected).
2. Remove the left side panel of the printer by removing the phillips head screws holding it in place.
3. Note and remove all ribbon cable connectors and small wire connectors from the DC power supply assembly (see Figure 4-56).
4. Remove the mounting screw and two hex nuts holding the DC power supply assembly against the chassis (see Figure 4-56).
5. Remove the DC power supply assembly.

Cutter Option Installation Procedures

Cutter Motor Installation

NOTE: The cover plates and cover plate mounting screws are not reused.

1. Open the media access door. Using a 7/64" allen wrench, remove the cutter assembly cover plate (see Figure 4-57).
2. Using a 9/64" allen wrench, remove the cutter motor cover plate (see Figure 4-57).
3. Position the cutter motor near the mounting hole on the mechanical side of the printer (see Figure 4-58).
4. Pass the cutter motor leads through the slit in the rubber grommet (Figure 4-58, #10). Insert the grommet into the slot located in the lower right area of the motor mounting hole and slide it into the small hole. The electrical connector must be positioned on the electronics side of the printer. To prevent the leads from coming out, rotate the grommet so the cut is facing away from the motor.
5. Position the cutter motor against the printer frame so that the screw holes in the motor line up with the holes in the frame, with the motor shaft toward the front of the printer.
6. Attach the motor to the printer frame using the two (2) motor mounting screws (Figure 4-58, #13).

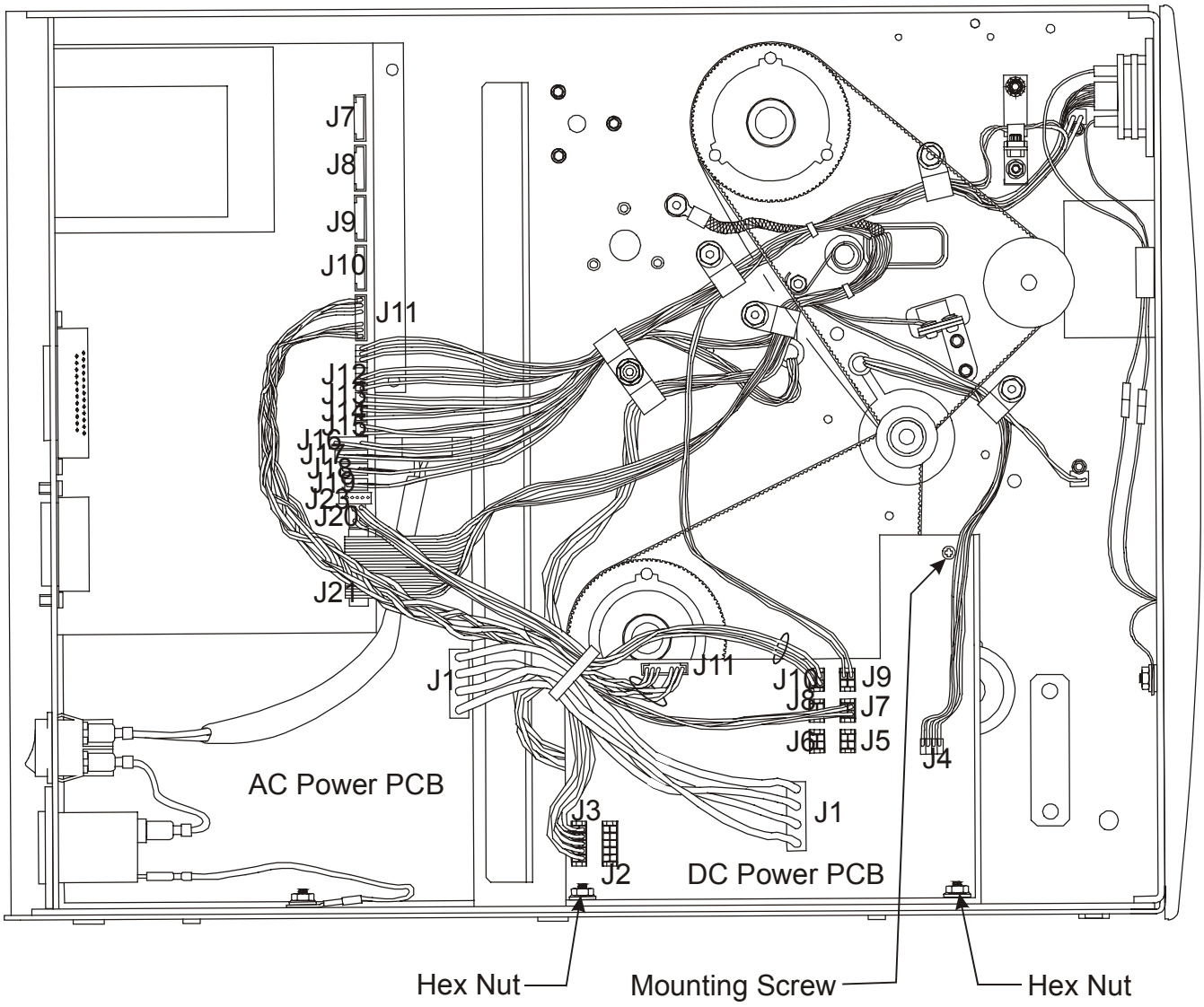


Figure 4-56 DC Power PCB location and interconnections for *Xi*III printers

DC Power Connectors			
NOTE: J5-J10 have the same outputs.			
J1	J1 AC Power PCB	J7	Cutter Option
J2	Additional Printhead Power for 220*Xi*III Printers	J8	N/A
J3	Printhead Power for all *Xi*III Printers	J9	LCD Display
J4	Stepper Motor	J10	J20 Main Logic PCB
J5	N/A	J11	J11 Main Logic PCB Data
J6	N/A		

Table 4-11 DC Power connectors

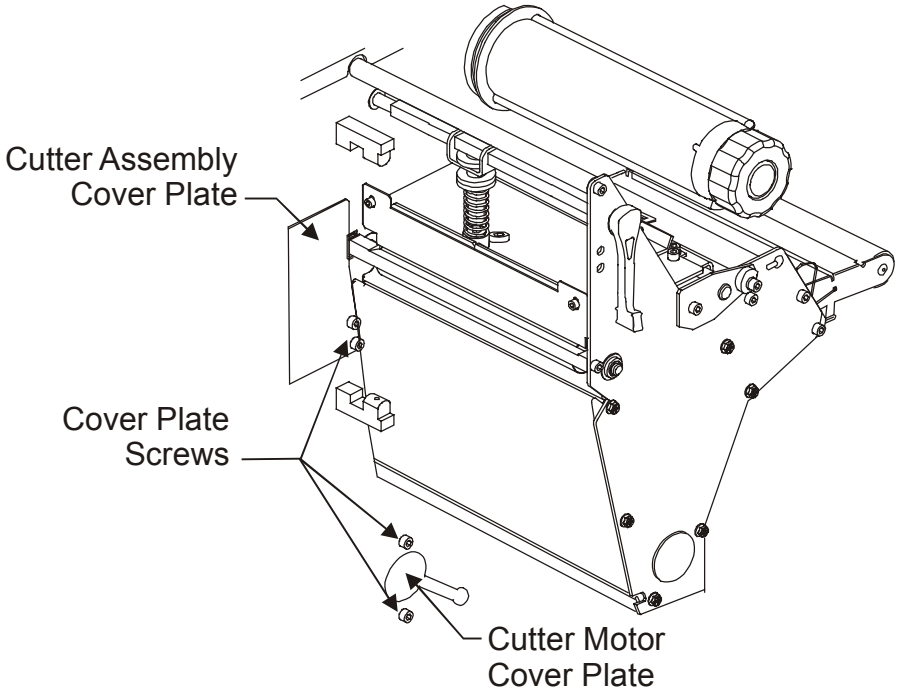


Figure 4-57 Cover Plate Locations

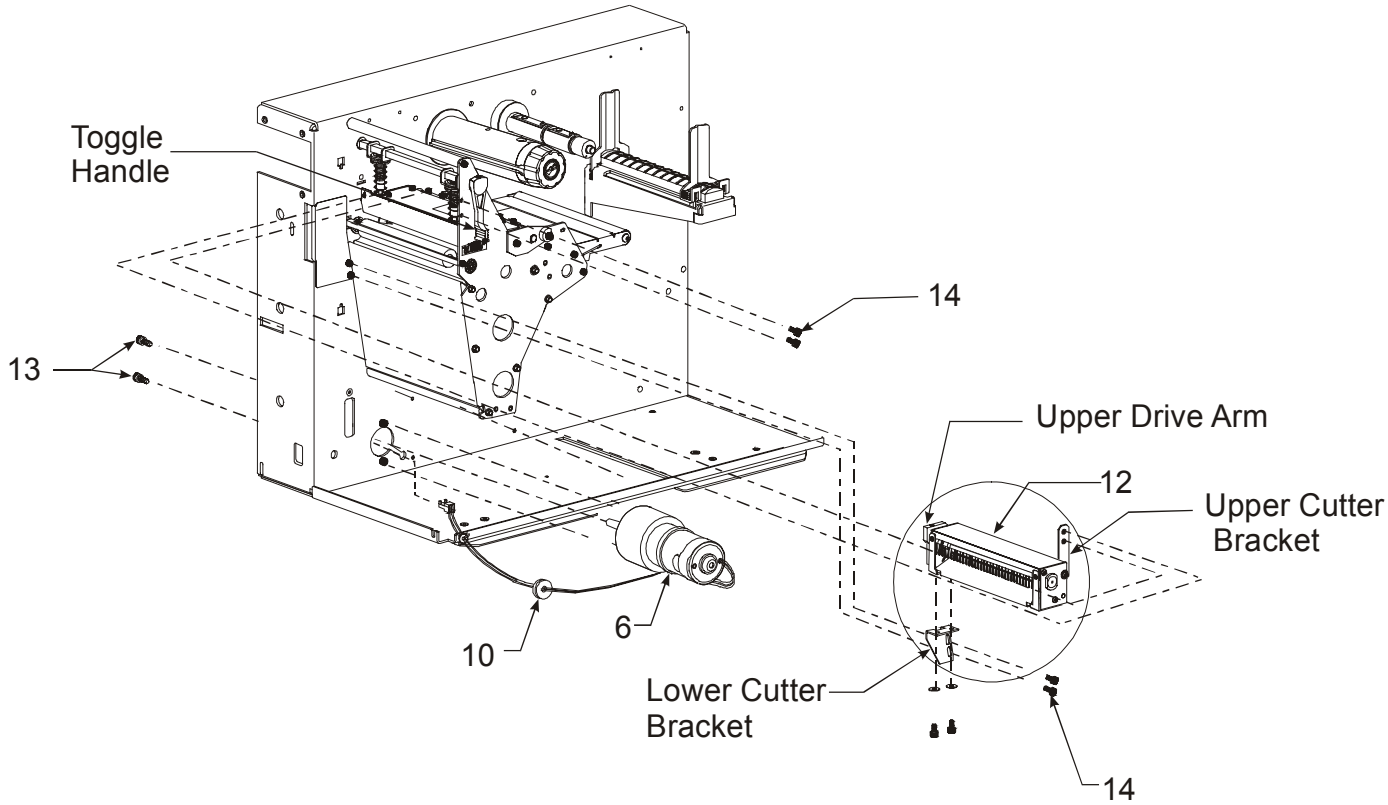


Figure 4-58 Mechanical Side Assembly

(See Table 4-10 for part identification)

Cutter Mechanical Assembly Installation

1. Locate the pre-assembled cutter mechanism and refer to Figure 4-58. The upper cutter bracket at the right rear corner of the cutter is placed in a horizontal position for shipping. Loosen the mounting screw using a 7mm (9/32") wrench. Rotate the bracket to a vertical position as in Figure 4-58 and snug up the screw. Do not tighten.
2. Under the left end of the Cutter, use a 7/64" hex wrench to loosen the two 6-32 screws which attach the lower cutter bracket to the cutter support bracket (see Figure 4-58).
3. Locate and orient the cutter mechanism as shown in Figure 4-58. Carefully work the mechanism into position partially in the main frame opening in front of the printhead. Position the upper cutter bracket so the threaded holes are inside the side plate and aligned with the two holes in the side plate near the toggle handle. Loosely attach the upper bracket to the side plate with two of the 6-32 screws (Figure 4-58, #14).
4. Now align the slots in the lower cutter bracket with the threaded holes in the main frame and loosely attach the bracket with two more of the 6-32 screws (Figure 4-58, #14).
5. Refer to Figure 4-59. Open the printhead and observe the position of the tear-off bar (in front of the platen roller) and the rear cutter blade. Position the cutter mechanism so that the rear cutter blade is parallel with the outer edge of the tear-off bar across the entire width of the media path. The Cutter Mechanism should be positioned as far forward as possible while maintaining parallelism with the tear-off bar. This should prevent interference of the rear cutter blade with the tear-off bar. Tighten all mounting screws.

NOTE: While tightening the upper cutter bracket mounting screw, be careful to not change the position of the media guide. if the media guide moves out of position, set it's height so that the lower edge is flush with the rear opening in the cutter mechanism.

The lower cutter blade is held in position by two springs. If these springs touch the tear bar or other printer parts, the lower cutter blade will not float properly and will cause excessive wear and premature failure of the cutter blades.

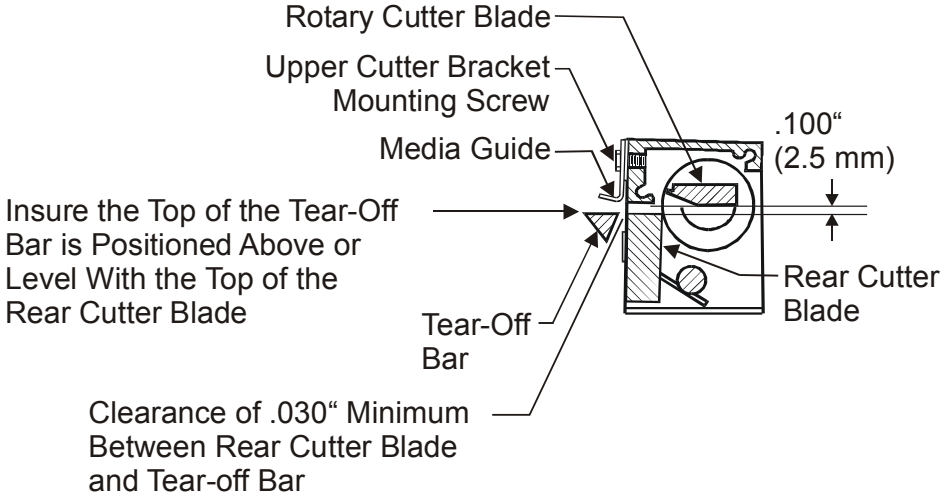
6. Check the clearance between the back of the cutter mechanism and the tear bar by inserting a screwdriver from the front of the cutter mechanism and press the top of the lower cutter blade toward the printer. The blade should move a minimum of .030 inches. If necessary, loosen the four phillips head screws on the bottom of the cutter module and reposition the cutter mechanism away from the tear-off bar.

Drive Link Assembly Installation

1. Remove the screw from the mounting post on the drive link assembly (Figure 4-60, #11). Secure the assembly with the screw, from the media side of the frame through the mounting hole into the drive link assembly.
2. The upper drive arm is pre-assembled to the cutter module (see Figure 4-58). Place the long drive link of the drive link assembly (Figure 4-60, #11) over the connecting post on the upper drive arm and secure it with the E-ring (Figure 4-60, # 16).
3. Attach the lower drive arm of the drive link assembly (Figure 4-60, #11) to the cutter motor shaft. Loosen the screws to insure the lower drive arm rotates freely on the motor shaft.
4. Apply a small amount of grease to the slot in the drive link assembly (Figure 4-60, #11) where the bearing will ride. Remove any excess grease to avoid damaging the optical sensor.

Cutter Circuit Board and Optical Sensor Installation

1. Attach the power cable (Figure 4-60, #2) to J2 on the cutter circuit board (see Figure 4-61).
2. Attach the data cable (Figure 4-60, #3) to Jl on the cutter circuit board (see Figure 4-61).
3. Locate the four (4) standoffs on the printer frame where the cutter board will be mounted.
4. Route the cutter motor leads between the two right hand standoffs and out under the bottom of the circuit board.
5. Position the cutter circuit board over all four standoffs.
6. Place the lock washer (Figure 4-60, #18) onto screw (Figure 4-60, #15) and install through the lower right hand circuit board mounting hole. Do not tighten at this time.
7. Install the three remaining mounting screws (Figure 4-60, #15) and tighten all four screws.
8. Wind the motor leads around the ferrite core as shown in Figure 4-62.
9. Pass the cutter board power cable along the bottom of the printer frame toward the main logic board.
10. Plug the motor leads into the cutter motor connector J4 on the cutter circuit board (see Figure 4-61) with the black lead to the left. To minimize interference between components, wedge the top of the ferrite core under the cutter board relay.
11. Install the cutter optical sensor assembly (Figure 4-60, #5) on the sensor mounting post. The Sensor part of the assembly should be mounted towards the printer frame.
12. Place the sensor clamp (Figure 4-60, #4) over the sensor and start the nut (Figure 4-60, #17) on the Post. **Do not tighten the nut at this time**.
13. Route the sensor leads under the clamp and towards the rear of the printer, and lightly tighten the nut to hold the wires in position. Be careful not to pinch the wires.
14. Plug the cutter sensor leads into the cutter Opto connector J3 on the cutter circuit board (see Figure 4-61).
15. Check the installation and insure that no wiring will touch any moving parts.


Rotary Cutter Blade
Upper Cutter Bracket Mounting Screw
Media Guide
.100“ (2.5 mm)
Insure the Top of the Tear-Off Bar is Positioned Above or Level With the Top of the Rear Cutter Blade
Rear Cutter Blade
Tear-Off Bar
Clearance of .030“ Minimum Between Rear Cutter Blade and Tear-off Bar

Relative Position of the Rotary Cutter Blade When the Drive Link Assembly is Stopped by the Optical Sensor, When the Power is on in the Cutter Mode

Figure 4-59 Cutter Mechanical Assembly Positioning

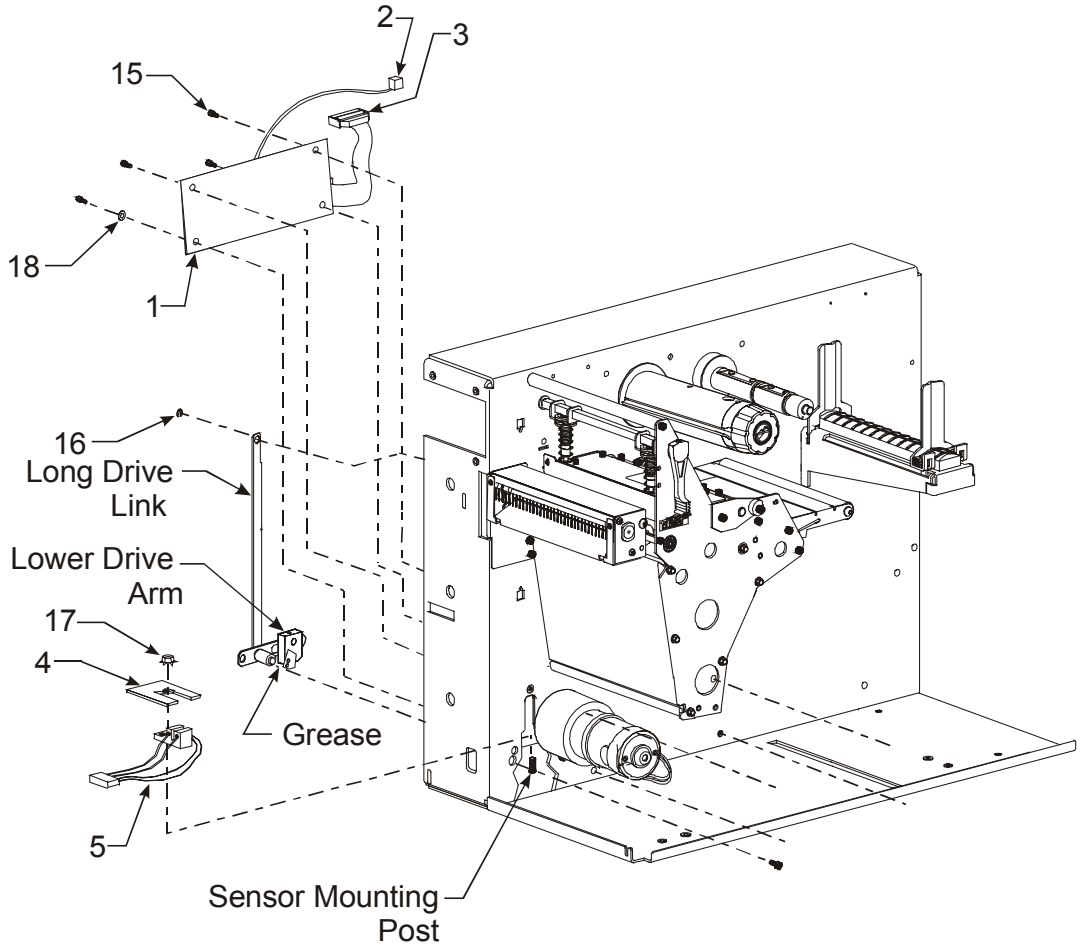


Figure 4-60 Linkage and circuit board installation

(See Table 4-10 for part identification)

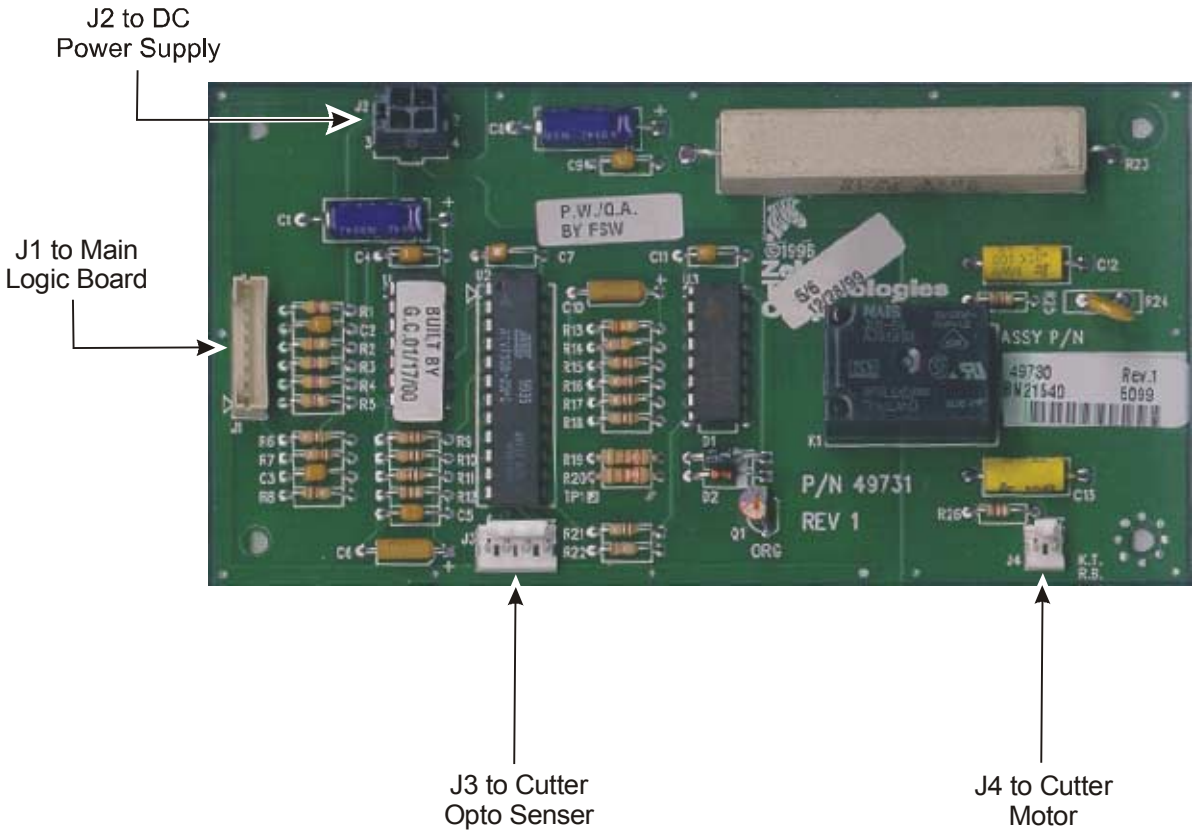


Figure 4-61 Cutter Option Circuit Board

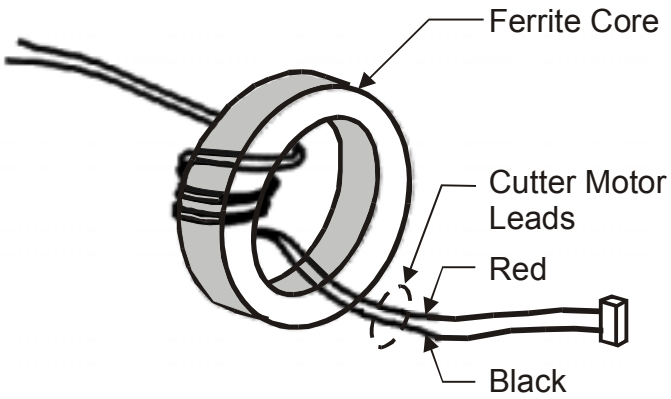


Figure 4-62 Cutter Motor Leads

Lower Drive Arm Mechanical Alignment

NOTE: To perform the lower drive arm mechanical alignment, some cables must be connected between the AC power supply, the DC power supply and the cutter board, but access to the cutter board is still required. In order to do this, the DC power supply assembly must not be installed inside the printer. Instead, the DC power supply assembly must be carefully positioned so that the cables are connected and will still allow access to the cutter board. Connect only the cables listed below.

1. Connect the power cable from Jl on the AC power supply board to J1 on the DC power supply board (see Figure 4-56).
2. Connect the power cable from J2 on the cutter board to any available J5-J10 connector (normally J7) on the DC power supply board (see Figure 4-56).
3. Connect the data ribbon cable from J1 on the cutter board to any available J7-J10 connector (normally J10) on the main logic board (see Figure 4-56).

NOTE: Do not connect any other cables or connectors at this time.

4. Attach the AC power cord and turn the printer on. If the cutter motor starts, wait for it to stop.

NOTE: The cutter motor must be rotated until the two flat surfaces of the cutter motor shaft are aligned with the set screws in the lower drive arm, while the lower drive arm is in a vertical position (sensor flag down).

5. Attach a test clip at one end of a jumper cable to the lead on the right end of capacitor C1 (+5 VDC SOURCE) on the cutter board (see Figure 4-61).
6. Briefly, touch the test clip at the other end of the jumper cable to test point TP1 on the cutter board to "jog" the cutter motor to the desired position.
7. Position the lower drive arm so the sensor flag is centered between the front and back portions of the optical sensor, then tighten the two set screws.
8. The set screws must be extremely tight to insure proper operation of the cutter mechanism. Tighten the set screws with the 5/64" allen key (Figure 4-55, #8) included with this kit. As a reference, when the set screws are tight, the allen key should deflect approximately 0.6" (1.5 cm) past the point of tightness. The tightness specification is 20 in. lb. (2.3 N/M).
9. Activate the cutter motor, and make certain the sensor flag travels through the slot in the optical sensor without touching it.
10. Turn the printer power switch off.

DC Power Supply Board Reinstallation

1. Install the DC power supply and tighten the mounting screw and two hex-head nuts. Insure all wires are positioned away from any moving mechanical parts and are not pinched or cut.
2. Carefully connect the remaining cables/connectors to the DC power supply board and verify proper placement and orientation (see Figure 4-56).
3. Reconnect the AC power cord.

4. Turn the printer power switch on and use the front panel LCD and control keys to configure the unit for cutter mode. Save as "PERMANENT" and then turn the printer power switch off. Refer to the printer user's guide for this procedure.
5. To test the cutter for proper operation, load media and ribbon, hold in the PAUSE key while turning the AC power on and run labels through the printer. If either of the following two conditions are not met, proceed to the upper drive arm alignment:
    a. Media fed through the printer without hitting either of the cutter blades.
    b. The cutter cut through the label material completely.
6. Complete this installation procedure by reinstalling the left side panel.

Upper Drive Arm Alignment

NOTE: The upper drive arm is part of the cutter mechanical assembly and has been aligned at the factory. If for some reason the position is altered, the following procedure may be used to realign the upper drive arm. The printer must be programmed to operate in the cutter mode prior to performing the following procedure. If it is not already programmed for cutter mode, refer to the printer user's guide for assistance.

1. Remove the printer's left side panel, if attached.
2. Loosen the allen head cap screw that clamps the upper drive arm to the rotary cutter blade shaft. The drive arm may be snug on the shaft.
3. Apply power to the printer. The lower drive arm of the drive link assembly should rotate once and stop when the sensor fag activates the optical sensor.
4. Refer to Figure 4-59. After the drive link assembly stops, hold the upper drive arm in position and adjust the rotary cutter blade so that the gap between the cutting edge on the left end and the cutting edge of the rear cutter blade is approximately a .100" (2.5mm).

NOTE: If the gap between the cutting edges is too large, the cutter may not cut properly across the entire media width. If the gap is too small, the media may catch on the rotary cutter blade edge and cause a jam.

5. Position the upper drive arm out from the cutter frame so its flat surface is flush with the end of the rotary cutter blade shaft.

NOTE: Overtightening the screw can damage the drive arm and can strip out the threads.

6. Tighten the allen head cap screw with a 5/32 inch allen bit socket on a torque wrench until the slot closes or until a torque of 100 in. lbs. (11.3 N/m) is reached.
7. Test the cutter alignment by feeding maximum width label stock through the printer and insuring that complete cutting of the label occurs. If necessary, repeat steps 4, 5, and 6 to achieve complete cutting of the labels.
8. With a felt tip pen, draw a line across the outer face of the upper drive arm and the end of the cutter blade shaft. Should cutter operation problems ever occur, this "witness mark" would show at a glance if the alignment of the clamp and the cutter blade shaft has changed.

SECTION 5 MAINTENANCE AND ASSEMBLY DRAWINGS

Description

Use the mechanical assembly drawings when troubleshooting or replacing components and use the associated parts list when ordering replacement parts. Item parts that do not have associated part numbers are not available and need to be ordered using the next highest assembly number.

Top: 90*Xi*III™ and 96*Xi*III™
Bottom: 140*Xi*III™, 170*Xi*III™ and 220*Xi*III™

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Printer Model: 90*Xi*III, 96*Xi*III, 140*Xi*III, 170*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	46937	Media Door with Window	1
1	47936	Media Door without Window	1
1	47077M	Kit, Media Door Bi-fold with Window	1
2	48272	Label, Media Load	1
3	*30392-004	Screw, 6-32 x .25, Phillips head	5
4	01861	Label, Supplies	1
5	46396-006	Screw, 6-32 x .37, Phillips head	1
6	30407-008	Screw, 6-32 x .5, 3/64 Allen	4
7	44114	Screw, M4.2 x 8 Hilo	12
8	44356	Washer, .198, .75 .085	3
9	46142	Name Plate, 170*Xi*III	1
9	47142	Name Plate, 90*Xi*III	1
9	48142	Name Plate, 140*Xi*III	1
9	47146	Name Plate, 96*Xi*III	1
10	48267	Spacer, 90/96*Xi*III and 170*Xi*III	2
11	22021	Switch, Panel Membrane	1
12	22492M	Kit, Maintenance, Switch Panel (Complete)	1
13	46037-1	Cover, Front; 170*Xi*III	1
13	47037-1	Cover, Front; 90/96*Xi*III	1
13	48037-1	Cover, Front; 140*Xi*III	1
14	46755M	LCD, Back Light	1
15	*30392-003	Screw, 6-32 x .19	3
16	01130	Nut, 6-32	3
17	07257	Washer	3
18	46491-1	Panel, Lower Media Trim, 170*Xi*III	1
18	46491-2	Panel, Lower Media Trim, 140*Xi*III	1
18	46491-3	Panel, Lower Media Trim, 90/96*Xi*III	1
19	46836	Spacer	2
20	30256-B	Nut, Thumb, 6-32 x .50 Brass	2
21	38342	Bracket, Front Cover, 170*Xi*III	1
21	47342	Bracket, Front Cover, 90/96*Xi*III	1
21	48342	Bracket, Front Cover, 140*Xi*III	1

Table 5-1 90*Xi*III, 96*Xi*III, 140*Xi*III and 170*Xi*III Final Assembly Mechanical

*Also Available in Hardware Kit 48205M

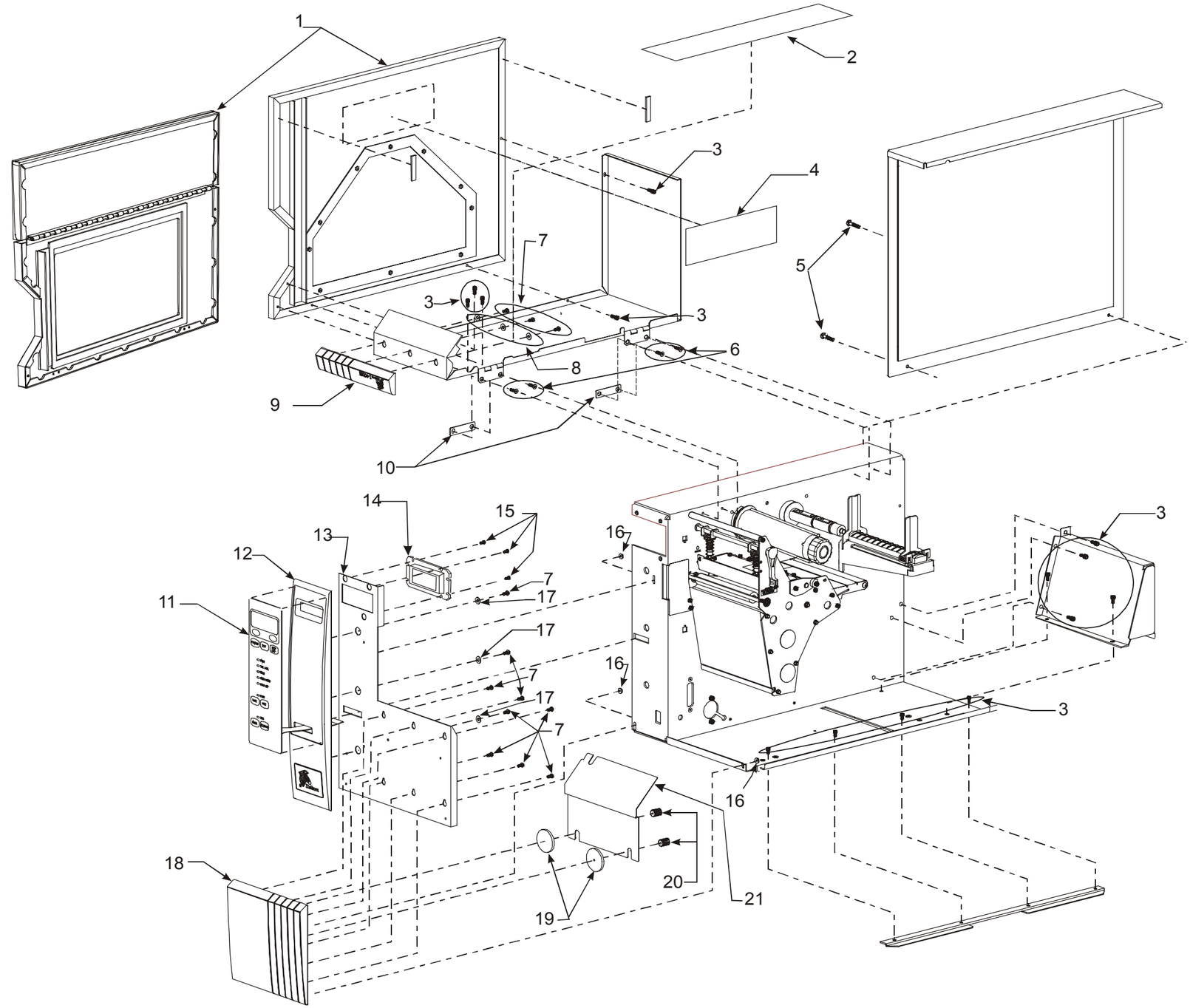


Figure 5-1 Final Assembly 90/96*Xi*III, 140*Xi*III and 170*Xi*III Mechanical

Printer Model: All Printers			
Item	**Part Number**	**Description**	**Qty**
1	47004M	Kit, Maintenance Main Logic Board	1
2	01130	Nut, 6-32 Hex Washer Head	2
3	01117	Clamp, Cable .312 Nylon	5
4	06222	Clamp, Cable .50	1
5	31336M	Kit, Maintenance RTU/MTU Pulley (90*Xi*III, 140*Xi*III, 170*Xi*III, 220*Xi*III)	1
5	47358M	Kit, Maintenance RTU/MTU Pulley 600dpi (96*Xi*III)	1
6	45189-5	Belt, Conductive .080P 235T (90*Xi*III, 140*Xi*III, 170*Xi*III, 220*Xi*III)	1
6	45189-12	Belt, Conductive .080P 245T (96*Xi*III) (600dpi)	1
7	Q06020	Tie-wrap, .09W x 3.62L	1
8	40355M	Assembly Platen Pulley Maintenance (90*Xi*III, 140*Xi*III, 170*Xi*III, 220*Xi*III)	1
8	47356M	Kit Maintenance Platen Pulley 600dpi (96*Xi*III)	1
9	38226M	Kit Maintenance Reflect Media Sensor	1
10	46199M	Kit, Stepper Motor w/Pulley (90*Xi*III, 170*Xi*III) (300 dpi)	1
10	46198M	Kit, Stepper Motor w/Pulley (140*Xi*III, 220*Xi*III) (203 dpi)	1
10	46196M	Kit, Stepper Motor w/Pulley (96*Xi*III)	1
11	45189-2	Belt, Conductive .080P 255T (90*Xi*III, 140*Xi*III, 170*Xi*III, 220*Xi*III)	1
11	45189-13	Belt, Conductive .080P 265T (96*Xi*III)	1
12	31336M	Kit, Maintenance Pulley Ribbon Take-up/Media Take-up (90*Xi*III, 140*Xi*III, 170*Xi*III)	1
12	47358M	Kit Maintenance Pulley, RTU/MTU (96*Xi*III)	1
13	46392-006	Screw, 6-32 x 0.37 Truss Head Phillips	1
14	49604-010	PA Cable Power Distribution	1
15	49600-010	PA Cable SP Comm	1
16	30914M	Assembly Pulley, Peel-Off Maintenance (90*Xi*III, 140*Xi*III, 170*Xi*III, 220*Xi*III)	1
16	47915M	Kit Maintenance Peel-Off Pulley (96*Xi*III)	1
17	49790M	Kit Maintenance Power Supply DC RT	1
18	46777	PA Cable Power AC	1
19	04393	Tie-wrap Beaded	1
20	49780M	Kit Maintenance PCB Power Supply AC	1
21	30208	Washer Flt .500 x .191 x .030	2
22	01152	Washer Flt .375 x .156 x .065	1

Table 5-2 Final Assembly All Printers (Electrical)

*Also Available in Hardware Kit 48205M

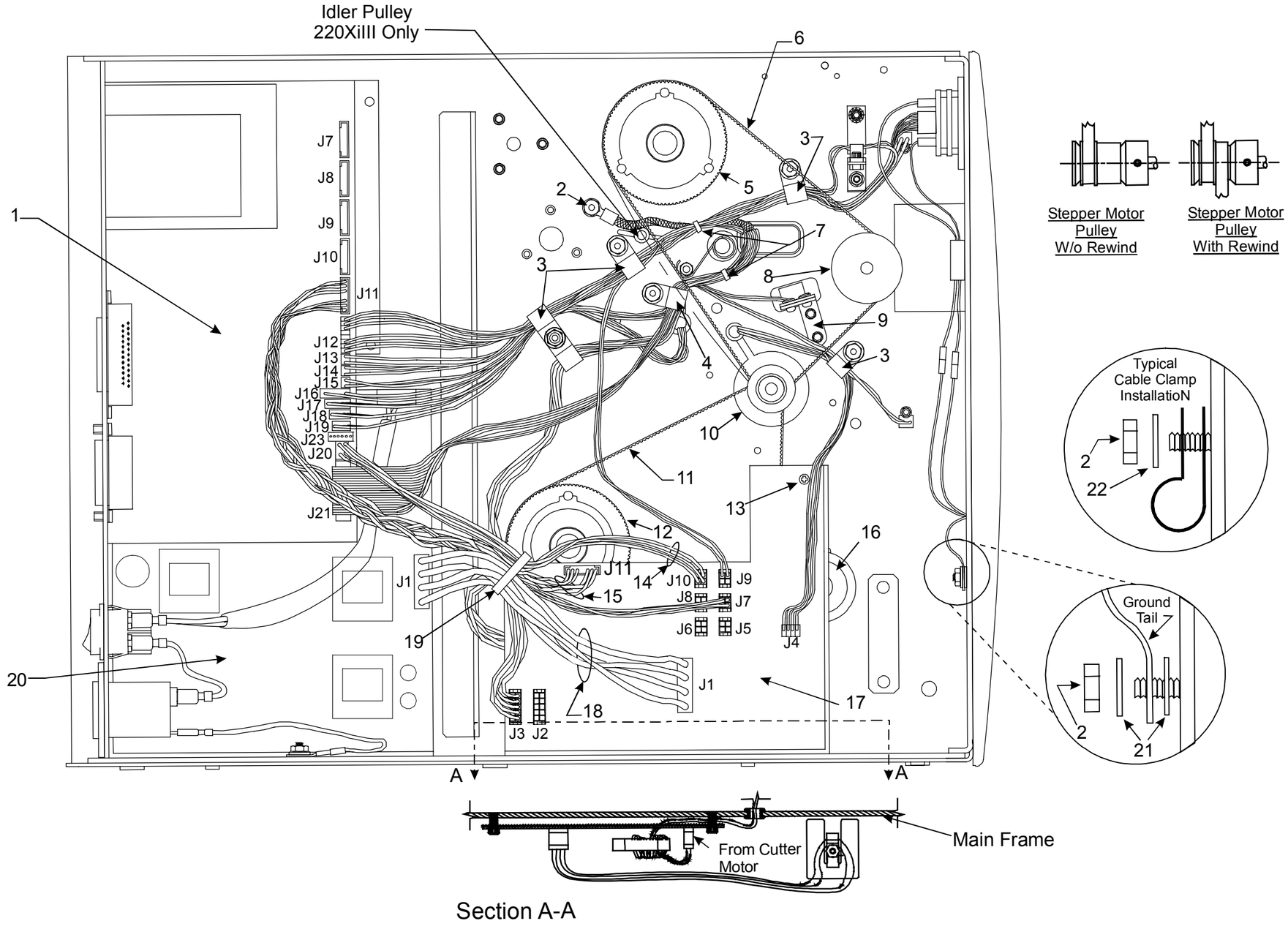


Figure 5-2 Final Assembly All Printers Electrical

Printer Model: 220*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	46937	Media Door with Window	1
1	47936	Media Door without Window	1
1	47077M	Kit, Media Door Bi-fold with Window	1
2	*30392-004	Screw, 6-32 x .25, CP SO H BO	18
3	01861	Label, Supplies w/Logo	1
4	46396-006	Screw, 6-32 x .37, Tr Ph S Bz	2
5	30407-008	Screw, 6-32 x .5, 3/64 Allen	4
6	44114	Screw, M4.2 x 8 HiLo Hex	3
7	07257	Washer, .438 x .188 x .036	9
8	22142	Name Plate, 220*Xi*III	1
9	22021	Switch, Panel Membrane	1
10	22492M	Kit, Maintenance, Switch Panel	1
11	22037-1	Cover, PCB	1
12	46755M	Kit, Maintenance LCD Back Light	1
13	01130	Nut, 6-32 Hex Washer Head	4
14	22491	Panel, Lower Media Trim	1
15	46836	Spacer	2
16	*30256-B	Nut, Thumb, 6-32 x .50 Brass	2
17	22342	Bracket, Front Cover	1

Table 5-3 220*Xi*III Final Assembly Mechanical View 1

*Also Available in Hardware Kit 48205M

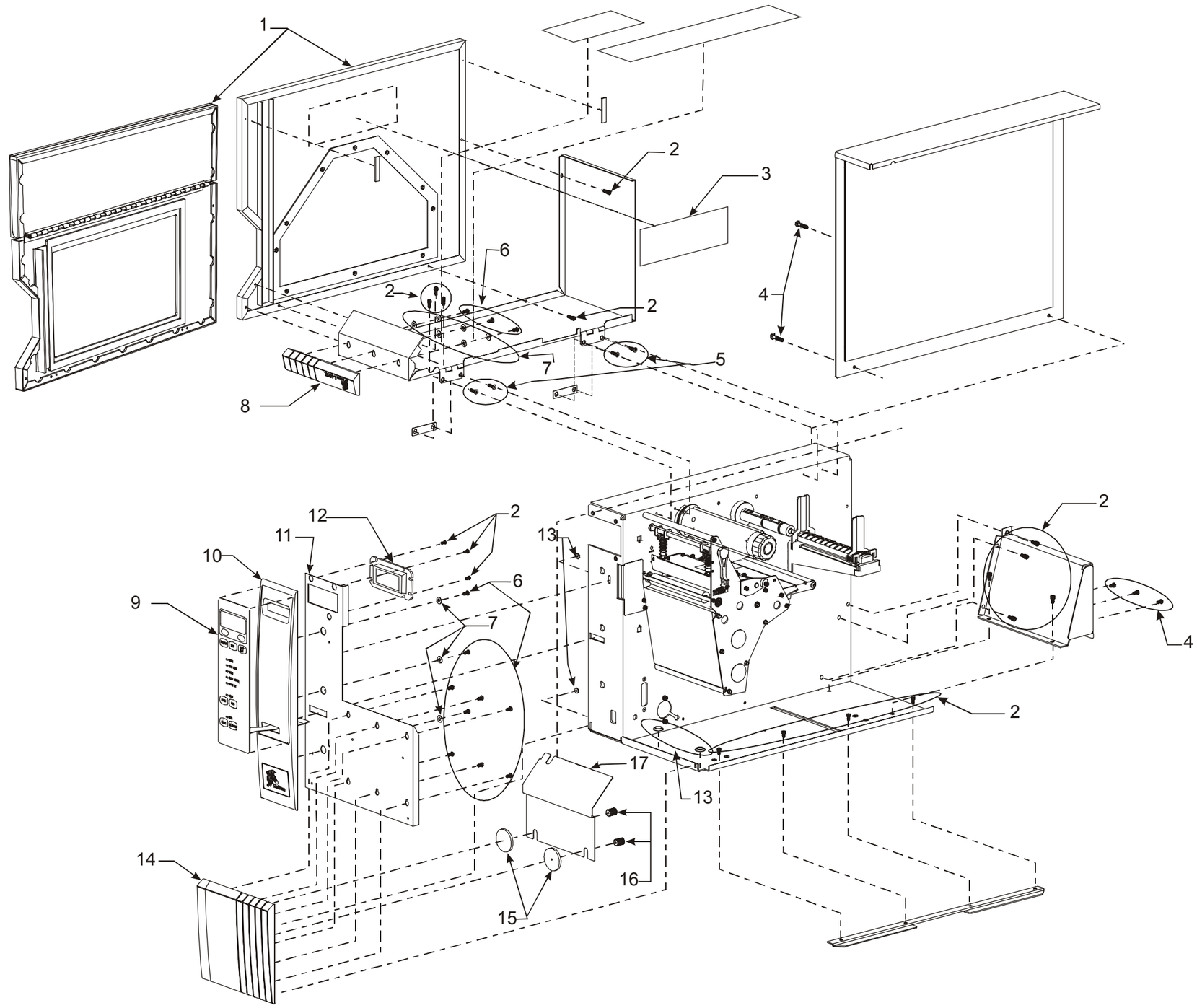


Figure 5-3 220*Xi*III Final Assembly Mechanical

Printer Model: 90*Xi*III, 96*Xi*III, 140*Xi*III, 170*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	*30392-004	Screw, 6-32 x .25	13
2	REF	Tri Mount Shoulder	1
3	46352M	Kit, Maintenance Flag	1
4	01130	Nut, 6-32 Hex Washer Head	1
5	30353M	Assembly, Head up Switch	1
6	30266	Stop, Head Lift Spring	1
7	40462	Cover, Media Take-up Sensor	2
8	*06268	Washer, Lock #6	3
9	*30392-006	Screw, 6-32 x .37	2
10	48023	Bearing, Rulon .313 x .190 x .375	1
11	47009-1	Roller .37 .312 x 4.437 (90*Xi*III, 96*Xi*III)	1
11	47009-3	Roller .37 .312 x 6.437 (140*Xi*III)	1
11	47009-8	Roller .37 .312 x 8.437 (170 *Xi*III)	1
12	30007-1	Shaft, Roller .187 x 4.5 (90*Xi*III, 96*Xi*III)	1
12	30007-3	Shaft, Roller .187 x 5.60 (140*Xi*III)	1
12	30007-8	Shaft, Roller (170*Xi*III)	1
13	44001	Screw, Self-Tap M3.5 x 11mm w/5mm Hex Head	11
14	40355M	Assembly, Platen Pulley Maintenance	1
15	38226	Kit, Maintenance Reflective Media Sensor	1
16	*30256-B	Nut, Thumb	1
17	30305RM	Assy, Guide Media (90 *Xi*III, 96 *Xi*III)	1
17	40305RM	Assy, Guide Media (140*Xi*III)	1
17	46305M	Assy, Guide Media (170*Xi*III)	1
18	30033	Guide,Adjustable Media	1
19	46267	Plug, Hole .5 Diameter x .125 thick	12
20	46091	Grommet, for a 1.25 x .625 cutout	1
21	30023	Plate, Cover Cutter	1
22	46224	Grommet, Rubber, .312 x .34 x .109	1
23	46199M	Kit, Maintenance Motor Stepper (90*Xi*III, 170*Xi*III) (300 dpi)	1
23	46198M	Kit, Maintenance Motor Stepper (140*Xi*III, 220*Xi*III) (203 dpi)	1
23	46196M	Kit, Maintenance Motor Stepper (96*Xi*III) (600 dpi)	1
24	*30393-006	Screw, 8-32 x .37	4
25	REF	Flange, Ball Bearing, .5 x .250 x .125	2
26	30105	Bearing, Nylon, .312 x .251 x .078	1
27	46105	Bearing, Nylon, .312 x .251 x .140	1
28	46808	Bar, Peel/Tear-Off (170 *Xi*III)	1
28	47808	Bar, Peel/Tear-Off (90 *Xi*III, 96 *Xi*III)	1
28	48808	Bar, Peel/Tear-Off (140 *Xi*III)	1

Printer Model: 90*Xi*III, 96*Xi*III, 140*Xi*III, 170*Xi*III			
Item	**Part Number**	**Description**	**Qty**
29	46278M	Kit, Maintenance Platen .780 x 6.73 (170 *Xi*III)	1
29	47601M	Kit, Maintenance Platen .788 x 3.588 (90 *Xi*III *96 Xi*III)	1
29	40038M	Kit, Maintenance Platen .78 x 5.213 (140 *Xi*III)	1
30	02252	Ring, Crescent, .250 Yel	2
31	30825	Plate, Upper Media Guide (Snap Plate) (90 *Xi*III *96 Xi*III)	1
31	48043-1	Plate, Upper Media Guide (Snap Plate) (170 *Xi*III)	1
31	48043-2	Plate, Upper Media Guide (Snap Plate) (140 *Xi*III)	1
32	Q10019	Ring, E Ext .250	1
33	38202M	Kit, Bar Pivot (170 *Xi*III)	1
33	47202M	Kit, Bar Pivot (90 *Xi*III *96 Xi*III)	1
33	48202M	Kit, Bar Pivot (140 *Xi*III)	1
34	35099M	Assembly, Toggle Move Maintenance	1 or 2
35	46302-4M	Kit, Maintenance Media Sensor (170 *Xi*III)	1
35	47302-4M	Kit, Maintenance Media Sensor (90 *Xi*III *96 Xi*III)	1
35	48302-4M	Kit, Maintenance Media Sensor (140 *Xi*III)	1
36	48411	Screw, Thumb	2
37	46691-1M	Kit, Maintenance Assembly, Dancer Arm w/Springs (90 *Xi*III *96 Xi*III)	1
37	46691-2M	Kit, Maintenance Assembly, Dancer Arm w/Springs (140 *Xi*III)	1
37	46691-3M	Kit, Maintenance Assembly, Dancer Arm w/Springs (170 *Xi*III)	1
38	*07229	Washer, Curved. .49 x .33 x .0075	1
39	*30423-003	Screw, Set 8-32 x .187	1
40	38202M	Kit, Bar Pivot (170 *Xi*III)	1
40	47202M	Kit, Bar Pivot (90 *Xi*III *96 Xi*III)	1
40	48202M	Kit, Bar Pivot (140 *Xi*III)	1
41	40248	Plate, Shaft Wear	1
42	40154	Pin, Eccentric	1
43	30956	Washer, Flat .207 x .146 x .030	2
44	*30392-008	Screw, 6-32 x .50	1
45	30826	Plug, Hole	2
46	30236	Screw, 4-40 x .25	1
47	30494	Washer .32 x .119 x .062	1
48	40031	Cover, Sensor Wire	1
49	46302-4M	Kit, Maintenance Media Sensor (Includes Upper and Lower Sensor)	1
50	30827	Bracket, PCB Media Sensor	1

*Also Available in Hardware Kit 48205M

Table 5-4 Printer Model: 90*Xi*III, 96*Xi*III, 140*Xi*III, 170*Xi*III Print Mechanism Assembly

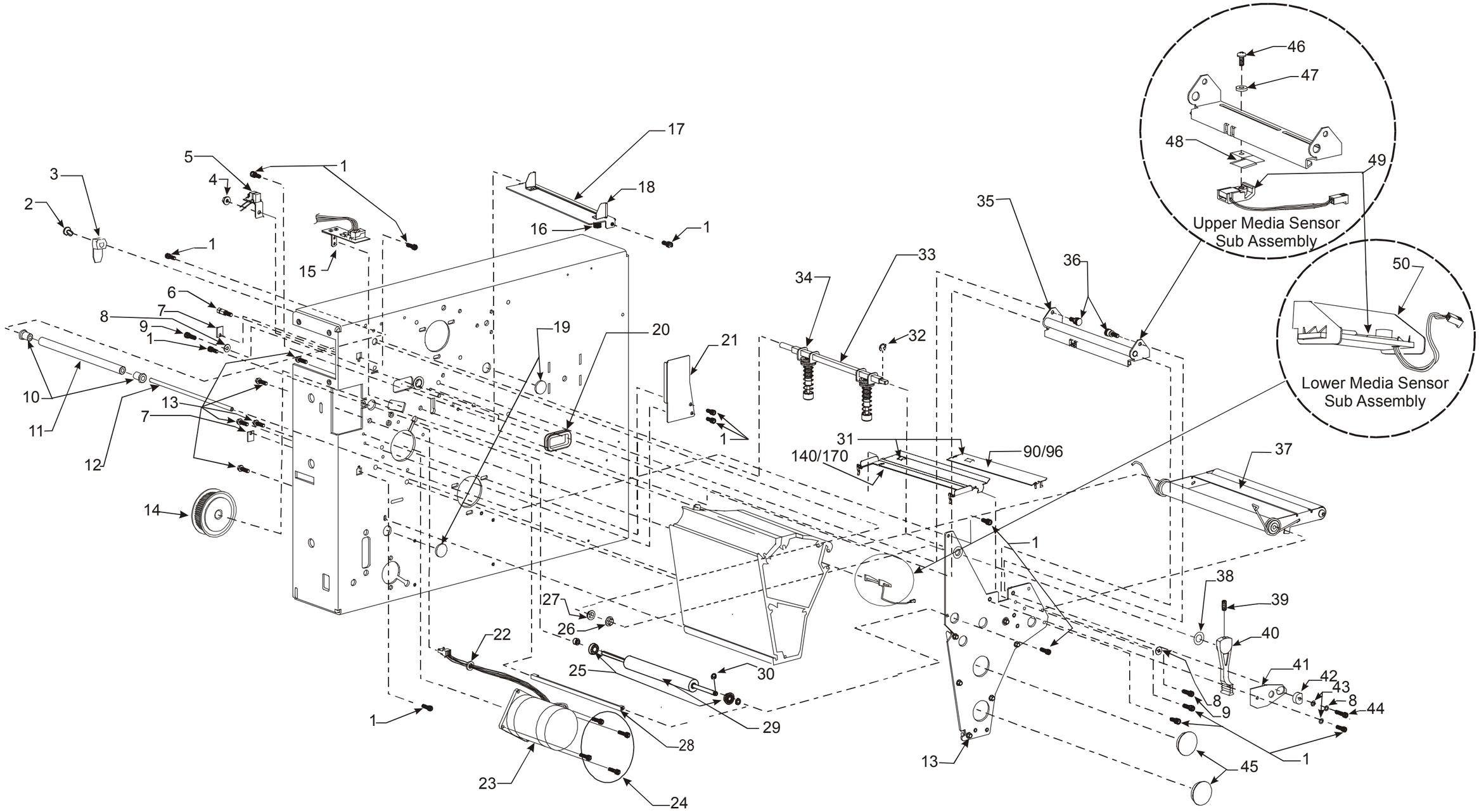


Figure 5-4 90/96*Xi*III, 140*Xi*III and 170*Xi*III Print Mechanism Assembly View 1

Printer Model: 90*Xi*III, 96*Xi*III, 140*Xi*III, 170*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	*30118	E-Ring Ext .500 x .042	1
2	31336M	Kit, Maintenance RTU/MTU (90*Xi*III, 140*Xi*III and 170*Xi*III)	1
2	47358M	Kit Maintenance Pulley, RTU/MTU (96*Xi*III)	1
3	*30114	Washer, Flt, .76 x .51 x .03	1
4	*30115	Washer, Wave, .740 x .520 x .080	1
5	06250	E-Ring EXT .312 Yel	1
6	40027	Spring, Torsion	1
7	*30106	Ring, Crescent, External, .312	1
8	*30393-006	Screw, 8-32 x .37	6
9	*40193	Washer, Flt, .406 x .172 x .048	3
10	REF	Screw, ¼-20 x .75 Cap	1
11	30466	Washer, .26 x .63 x .06	1
12	REF	Support, Media Supply	1
13	46253M	Kit, Media Supply Three (3) Inch (170*Xi*III) (Optional)	1
13	46044M	Kit, 40mm, Media Supply (170*Xi*III) (Optional)	1
13	47253M	Kit, Media Supply Three (3) Inch (90/96*Xi*III) (Optional)	1
13	47044M	Kit, 40mm, Media Supply (90/96*Xi*III) (Optional)	1
13	48253M	Kit, Maintenance Spindle Supply Three (3) Inch (140*Xi*III) (Optional)	1
13	48044M	Kit, 40mm Media Supply, (140*Xi*III) (Optional)	1
14	*30239	Washer, Crescent, .415 x 323 x .062	1
15	46151M	Kit, Maintenance Spindle Ribbon Supply (170*Xi*III)	1
15	47151M	Kit, Maintenance Spindle Ribbon Supply (90/96*Xi*III)	1
15	48151M	Kit, Maintenance Spindle Ribbon Supply (140*Xi*III)	1
16	46350	Kit, Upgrade Enhanced Ribbon Take-Up (170*Xi*III)	1
16	47250	Kit, Upgrade Enhanced Ribbon Take-Up (90/96*Xi*III)	1
16	48250	Kit, Upgrade Enhanced Ribbon Take-Up (140*Xi*III)	1
17	46813-7M	Kit, Maintenance Compliant Roller (170*Xi*III only)	1
18	01130	Nut, 6-32 Hex Washer Head	1

Table 5-5 90/96*Xi*III, 140*Xi*III, 170*Xi*III Print Mechanism Assembly View 2

*Also Available in Hardware Kit 48205M

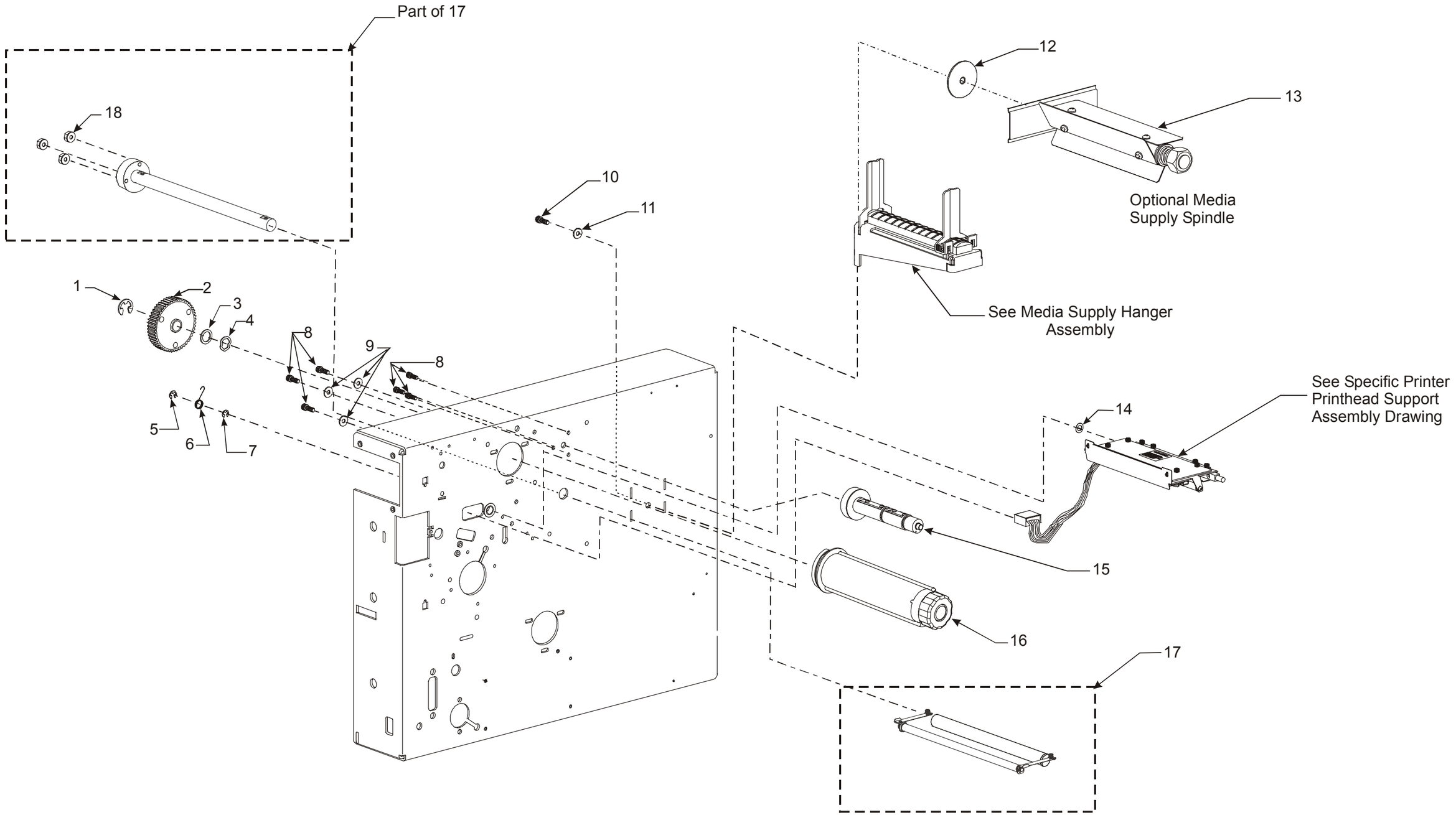


Figure 5-5 90/96XiIII, 140XiIII and 170XiIII Print Mechanism Assembly View 2

Printer Model: All Series			
Item	**Part Number**	**Description**	**Qty**
1	47004M	Kit, Maintenance Main Logic Board	1
2	*30391-003	Screw, 4-40 x .19	4
3	49036-1	Cover, PCB Option	1
4	49605-009	Cable, Power Switch	1
5	49669	Switch, Power	1
6	30406-006	Screw, 4-40 x .375	2
7	49673	Power Entry w/Fuse and Ground. Wire	1
8	49699-01	Cable (Brown)	1
9	49699-06	Cable (Blue)	1
10	46392-006	Screw, Truss Head Phillips, 6-32 x .37	7
11	*01159	Washer, Lock #6	1
12	01130	Nut, 6-32 Hex Washer Head	3
13	22416	Standoff, 4-40 Hex	2
14	*01155	Washer, Lock #6	2
15	07696	Screw, 4-40 x .31	2
16	30236	Screw, 4-40 x .25	1
17	49013	Cover, Memory Card, (PCMCIA)	1
18	46102-1	Panel, Rear	1
19	47020M	Kit, Maintenance Counter Board	1
20	49313	Spacer, Top, (AC Power Supply)	2
21	01822	Nut, 4040	5
22	49780M	Kit, Maintenance PCB Power Supply AC	1
23	49285	Pad, Insulation (AC Power Supply)	1
24	30253	Plate, Options Cover	1
25	46254	Plate, Cover, Cutter	1
26	30405-006	Screw. ¼-20 x .38	1
27	30466	Washer .26 x .63 x .06	1
28	*30393-006	Screw, 8-32 x .37	5
28	30393-010	Screw, 8-32 x .62 (220*Xi*III)	3
29	30407-004	Screw, 6-32 x .25	2
30	49790M	Kit, Maintenance Power Supply DC	1
31	46015	Bumper	4
32	08754	Eye, .183 x .157 x .187	4
33	*07435	Screw, Lock Hex, 6-32 x .37	4
34	49286	Pad, Insulation DC Power Supply	1

Table 5-6 All Series Print Mechanism Assembly View 3

*Also Available in Hardware Kit 48205M

AA, BB, & CC Indicate Mounting Hardware Positions.

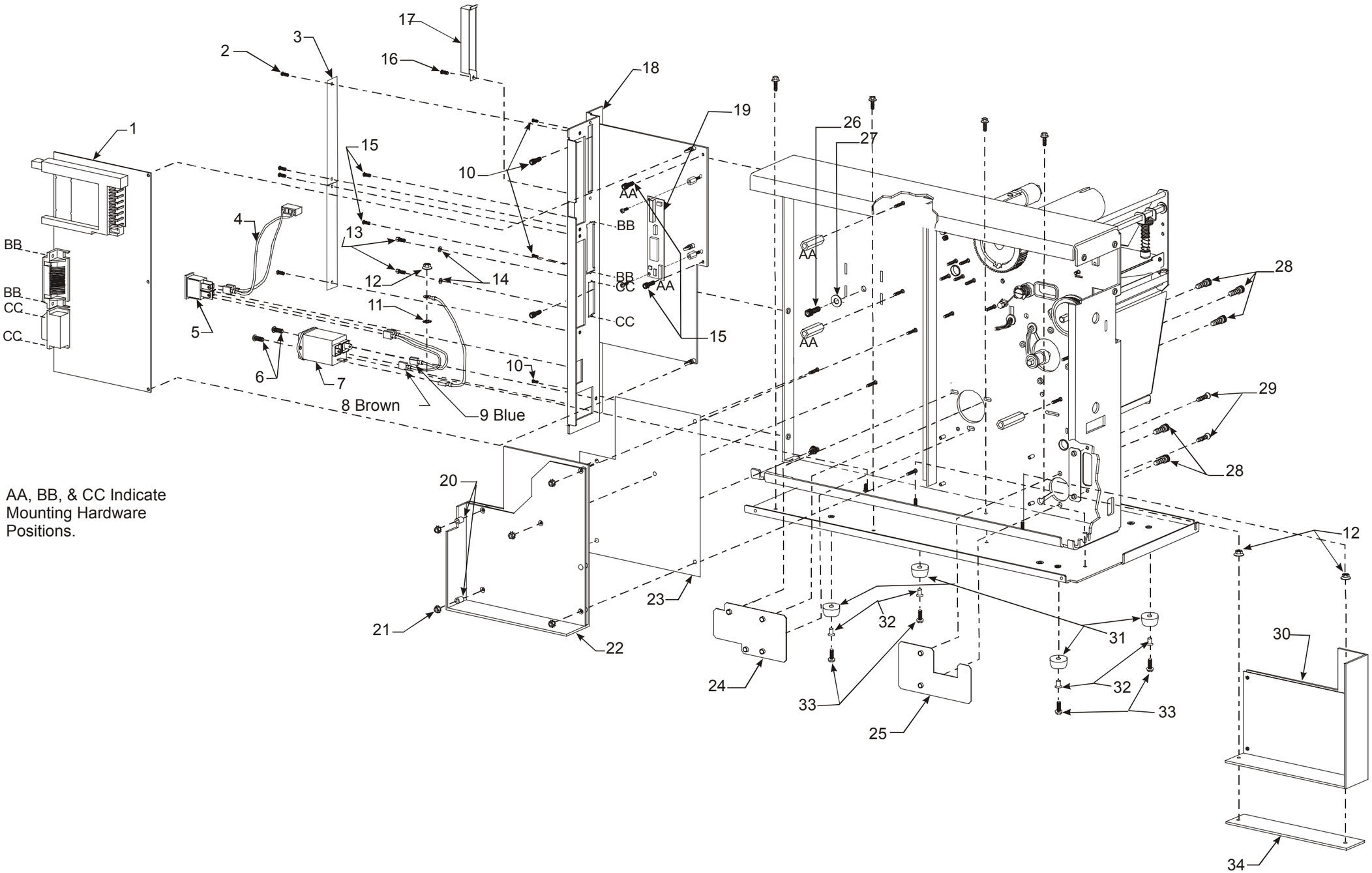


Figure 5-6 All Series *Xi*III Print Mechanism Assembly View 3

Printer Model: 220*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	46091	Grommet (for 1.25 x .625 cutout)	2
2	*30392-004	Screw, 6-32 x .25	13
3	REF	Tri Mount Shoulder	1
4	46352M	Kit, Maintenance Flag	1
5	01130	Nut, 6-32 Hex Washer Head	1
6	30353M	Assembly, Head up Switch Maintenance	1
7	46896	Bushing	2
8	46128	Washer, Flat, Nylon .505 x .192 x .015	2
9	48023	Bearing, .313 x .190 x .375	2
10	30009-10	Roller, .37 x .312	1
11	30007-9	Shaft, Roller	1
12	*30392-008	Screw, 6-32 x .50	2
13	*30392-006	Screw, 6-32 x .25	2
14	*06268	Washer, Lock #6	3
15	40462	Cover, Take Label Sensor	2
16	44001	Screw, Self-Tap 3.5 x 11 mm with 5mm Hex Head	11
17	40355M	Assembly, Platen Pulley Maintenance	1
18	38226	Kit, Maintenance Reflective Media Sensor	1
19	40462	Nut, Expansion 8/10	1
20	*30256-B	Nut, Thumb 6-32 x .50 Brass	2
21	22305M	Kit, Maintenance Guide Media	1
22	30033	Guide, Adjustable Media	1
23	22304M	Kit, Maintenance Damper Cover	1
24	*30402-006	Screw, 6-32 x .37	1
25	46267	Plug, Hole .5 Diameter x .125 Thick	3
26	46224	Grommet, Rubber .312 x .34 x .109	2
27	31493M	Kit, Maintenance Motor, DC Stepper	1
28	*30393-006	Screw, 8-32 x .37	1
29	22808	Bar, Peel/Tear-off	1

Printer Model: 220*Xi*III			
Item	**Part Number**	**Description**	**Qty**
30	REF	Flange, Ball Bearing .5 x .250 x .125	2
31	30105	Bearing, Nylon .312 x .251 x .078	1
32	46105	Bearing, Nylon .312 x .251 x .140	1
33	02252	Ring, Crescent .250	1
34	22101M	Kit, Maintenance Platen .780 x 8.73	1
35	22222M	Kit, Maintenance Bar Pivot	2
36	22222M	Kit, Maintenance Bar Pivot	1
37	Q10019	Ring, E Ext .250	1
38	48043-4	Plate, Upper Media Guide (Snap Plate)	1
39	22302M	Kit, Maintenance Media Sensor	1
40	48411	Screw, Thumb	2
41	30827	Bracket, Media Sensor PCB	1
42	46302-4M	Kit, Maintenance Media Sensor (Includes Upper Sensor)	1
43	22391M	Assembly, Dancer Arm w/Springs	1
44	*07229	Washer, Curved .49 x .33 x .0075	1
45	*30423-003	Screw, Set 8-32 x .187	1
46	22222M	Kit, Maintenance Bar Pivot	1
47	40248	Plate, Shaft Wear	1
48	40154	Pin, Eccentric	1
49	30956	Washer, Flat .207 x .146 x .030	2
50	30826	Plug, Hole	2
51	30236	Screw, 4-40 x .25	1
52	30494	Washer .32 x .119 x .062	1
53	40031	Cover, Sensor Wire	1
54	46302-4M	Kit, Maintenance Media Sensor (Includes Lower Sensor)	1
55	44931	Ring, E .218 Shaft	1
56	44288	Washer, .50 x .25 x .031	2

*Also Available in Hardware Kit 48205M

Table 5-7 220*Xi*III Print Mechanism View 1

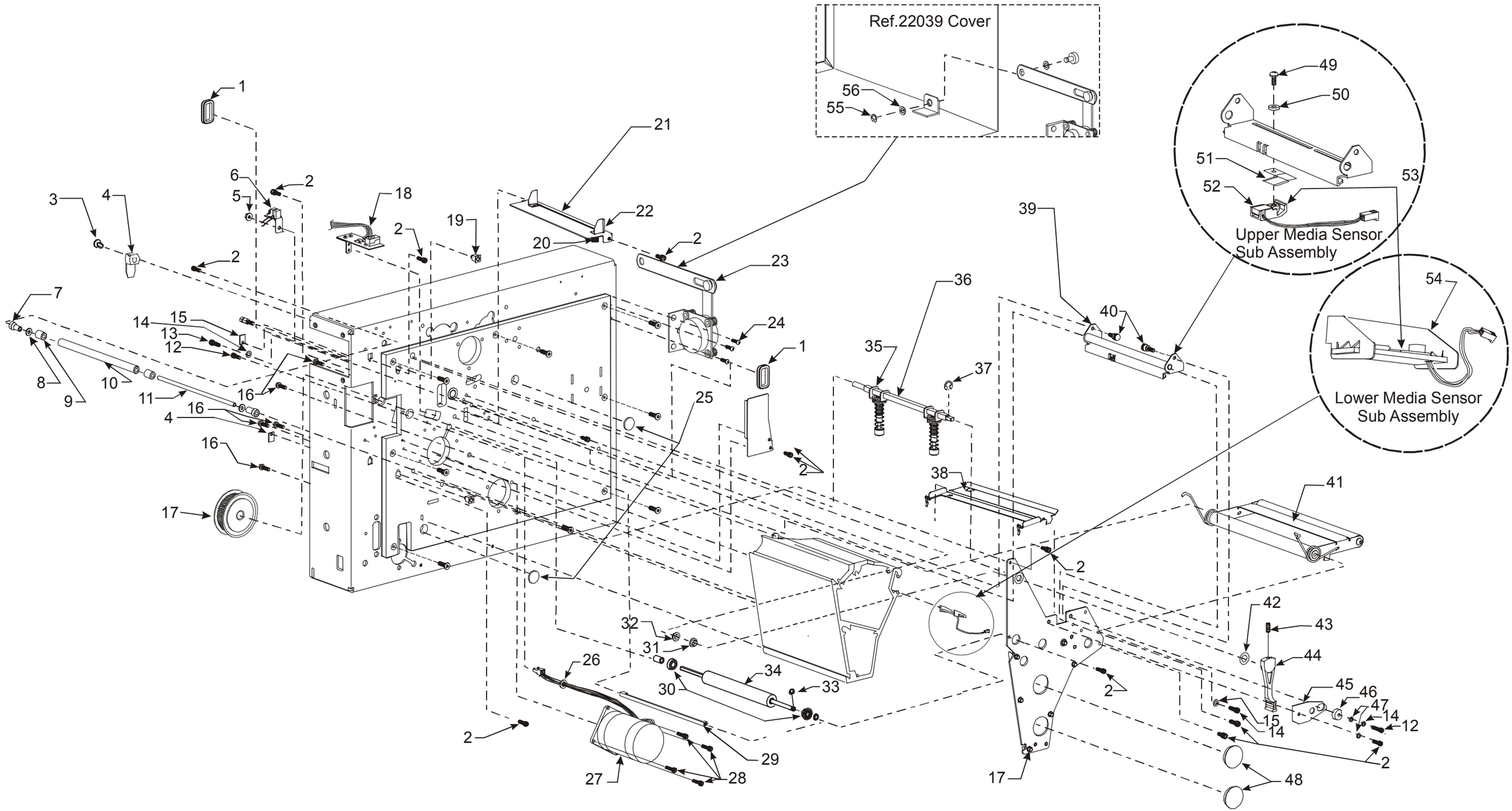


Figure 5-7 220*Xi*III Print Mechanism View 1

Printer Model: 220*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	*30118	E-Ring .500 x .042	1
2	31336M	Kit, Maintenance RTU/MTU Pulley	1
3	*30114	Washer, Flat .76 x .51 x .03	1
4	*30115	Washer, Wave .740 x .520 x .080	1
5	06250	E-Ring .312 Yel	1
6	40027	Spring, Torsion	1
7	*30106	Ring, Crescent, External .312	1
8	30265	Pulley, Idler	1
9	22207	Shaft, Idler Pulley	1
10	*30393-006	Screw, 8-32 x .37	5
11	*40193	Washer, Flat .406 x .172 x .048	4
12	30466	Washer, .26 x .63 x .06	1
13	*30392-004	Screw, 6-32 x .25	1
14	Ref	Support, Media Supply	1
15	22253M	Kit, Maintenance Spindle, Media Supply	1
16	*30239	Washer, Crescent .415 x .323 x .062	1
17	22151M	Kit, Maintenance Spindle, Ribbon supply	1
18	22250	Kit Upgrade Enhanced Ribbon Take-up	1
19	22213-7M	Kit, Maintenance Compliant Roller	1
20	30392-014	Screw, 6-32 x .87	3

Table 5-8 220*Xi*III Printer Mechanism View 2

*Also Available in Hardware Kit 48205M

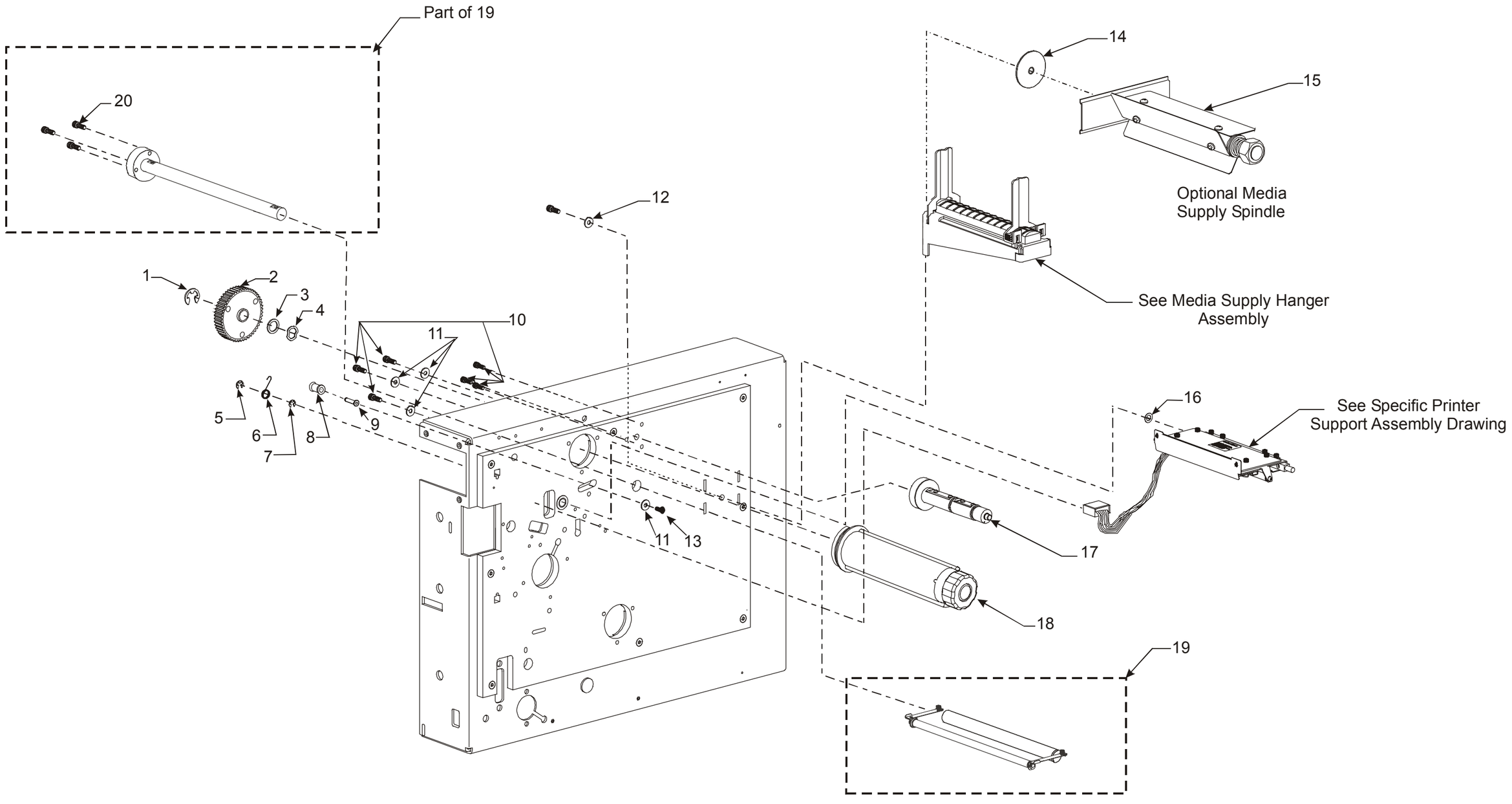


Figure 5-8 220*Xi*III Print Mechanism View 2

Printer Model 90*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	*30392-004	Screw, 6-32 x .25	10
2	30781	Cable, Ground Printhead	1
3	*01159	Washer, Flat .250 x .125 x .028	4
4	48182	Rivet Snap .138 x .08 Plastic	2
5	30314R	Adhesive	1
6	30007-5	Shaft, Roller .187 x 4.105	1
7	46882-003	Screw, 4-40 x 3/16	2
8	47017	Plate, Ribbon Strip	1
9	48099-2	Roller .332 x .212 x 4.050	1
10	22016	Screw, M3 x .5 Low Profile	1
11	47212	Plate, Pressure	1
12	46899-3	Brush, Static	1
13	47103	Bracket, Head Mounting	1
14	*06268	Washer, #6 Lock	4
15	30013	Plate, Washer	1
16	*30402-006	Screw, 6-32 x .37	1
17	30494	Washer, .320 x .119 x .062	1
18	Q06020	Tie-wrap .09 W x 3.62 L	1
19	*01153	Washer, Flat .250 x .125 x .028	1
20	*30391-003	Screw, 4-40 x .19	1
21	47641	Cable, Printhead Data	1
22	46665M	Kit, Maintenance, Sensor Ribbon	1
23	47000M	Kit, Maintenance Printhead	1
24	47640	Cable, Printhead Power	1
25	47014	Plate, Guard	1
26	*40193	Washer, Flat .406 x .172 x .048	2
27	*40194	Washer, Curved .344 x .172 x .006	2
28	*46481-1	Screw, Adjustment M3.5	2

Table 5-9 90*Xi*III Printhead Support Assembly

*Also Available in Hardware Kit 48205M

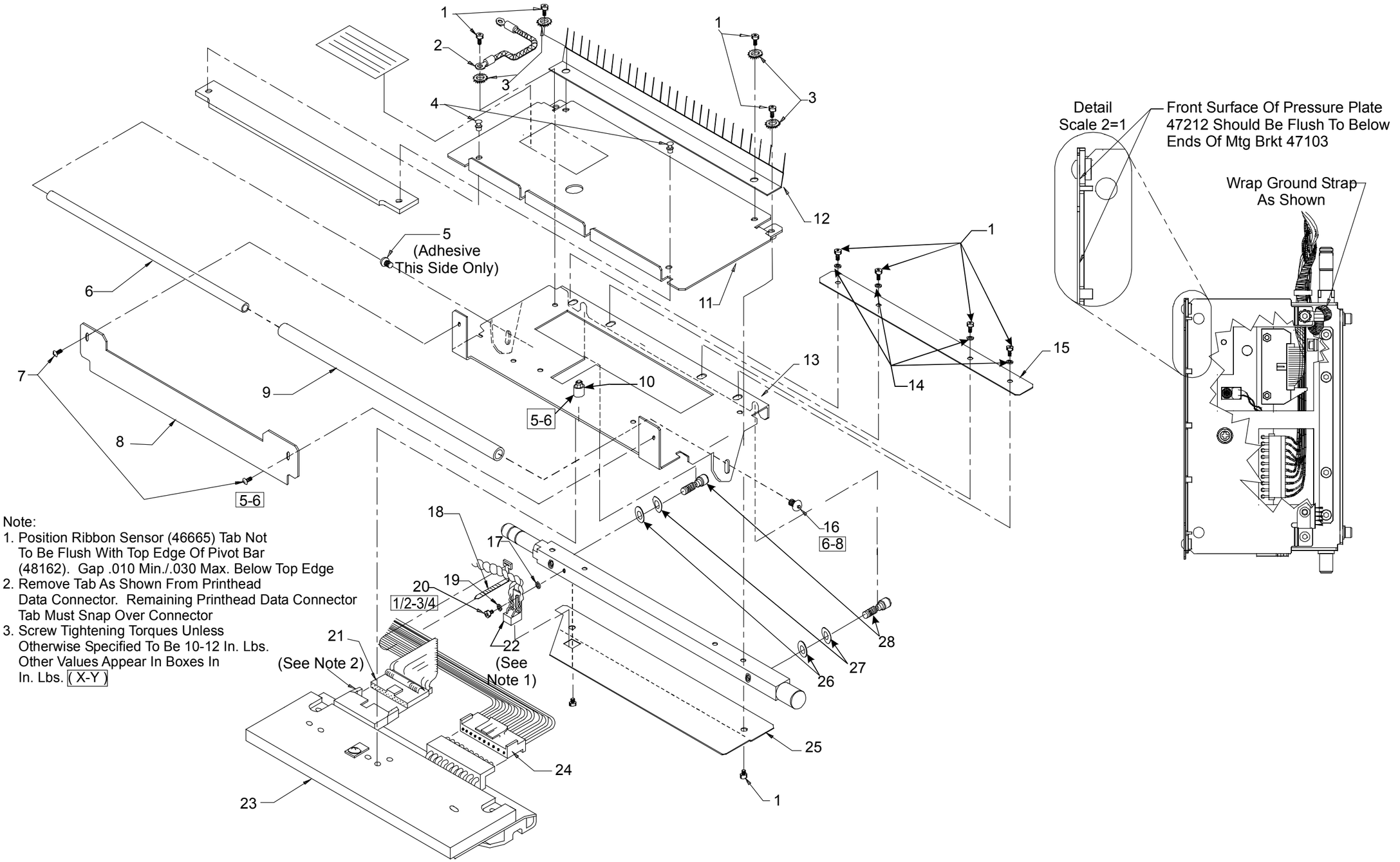

Detail
Scale 2=1
Front Surface Of Pressure Plate 47212 Should Be Flush To Below Ends Of Mtg Brkt 47103
Wrap Ground Strap As Shown
5 (Adhesive This Side Only)
(See Note 2)
22 (See Note 1)
1/2-3/4
5-6
6-8
Note:
1. Position Ribbon Sensor (46665) Tab Not To Be Flush With Top Edge Of Pivot Bar (48162). Gap .010 Min./.030 Max. Below Top Edge
2. Remove Tab As Shown From Printhead Data Connector. Remaining Printhead Data Connector Tab Must Snap Over Connector
3. Screw Tightening Torques Unless Otherwise Specified To Be 10-12 In. Lbs. Other Values Appear In Boxes In In. Lbs. (X-Y)

Figure 5-9 90*Xi*III Print Head Support Assembly

Printer Model 96*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	*30392-004	Screw, 6-32 x .25	10
2	30781	Cable, Ground Printhead	1
3	*01159	Washer, Flat .250 x .125 x .028	4
4	48182	Rivet Snap .138 x .08 Plastic	1
5	30314R	Adhesive	1
6	30007-5	Shaft, Roller	1
7	46882-003	Screw, 4-40 x .19	2
8	47017	Plate, Ribbon Strip	1
9	48099-2	Roller .332 x .212 x 4.050	1
10	22016	Screw, M3 x .5 Low Profile	1
11	47212	Plate, Pressure	1
12	47099	Brush, Static	1
13	47203	Bracket, Head Mounting	1
14	*06268	Washer, #6 Lock	4
15	30013	Plate, Washer	1
16	*30402-006	Screw, 6-32 x .37	1
17	30494	Washer, .320 x .119 x .062	1
18	Q06020	Tie-wrap .09 W x 3.63 L	1
19	*01153	Washer, Flat .250 x .125 x .028	1
20	*30391-003	Screw, 4-40 x .19	1
21	46803M	Kit, Maintenance Printhead Cable (600dpi)	1
22	46665M	Kit, Maintenance Sensor Ribbon	1
23	47500M	Kit, Maintenance Printhead (600dpi)	1
24	47640	Cable Printhead Power	1
25	47014	Plate, Guard	1
26	*40193	Washer, Flat .406 x .172 x .048	2
27	*40194	Washer, Curved .312 x .144 x .016	2
28	*46481-1	Screw, Adjustment 6-32	2

Table 5-10 96*Xi*III Printhead Support Assembly

*Also Available in Hardware Kit 48205M

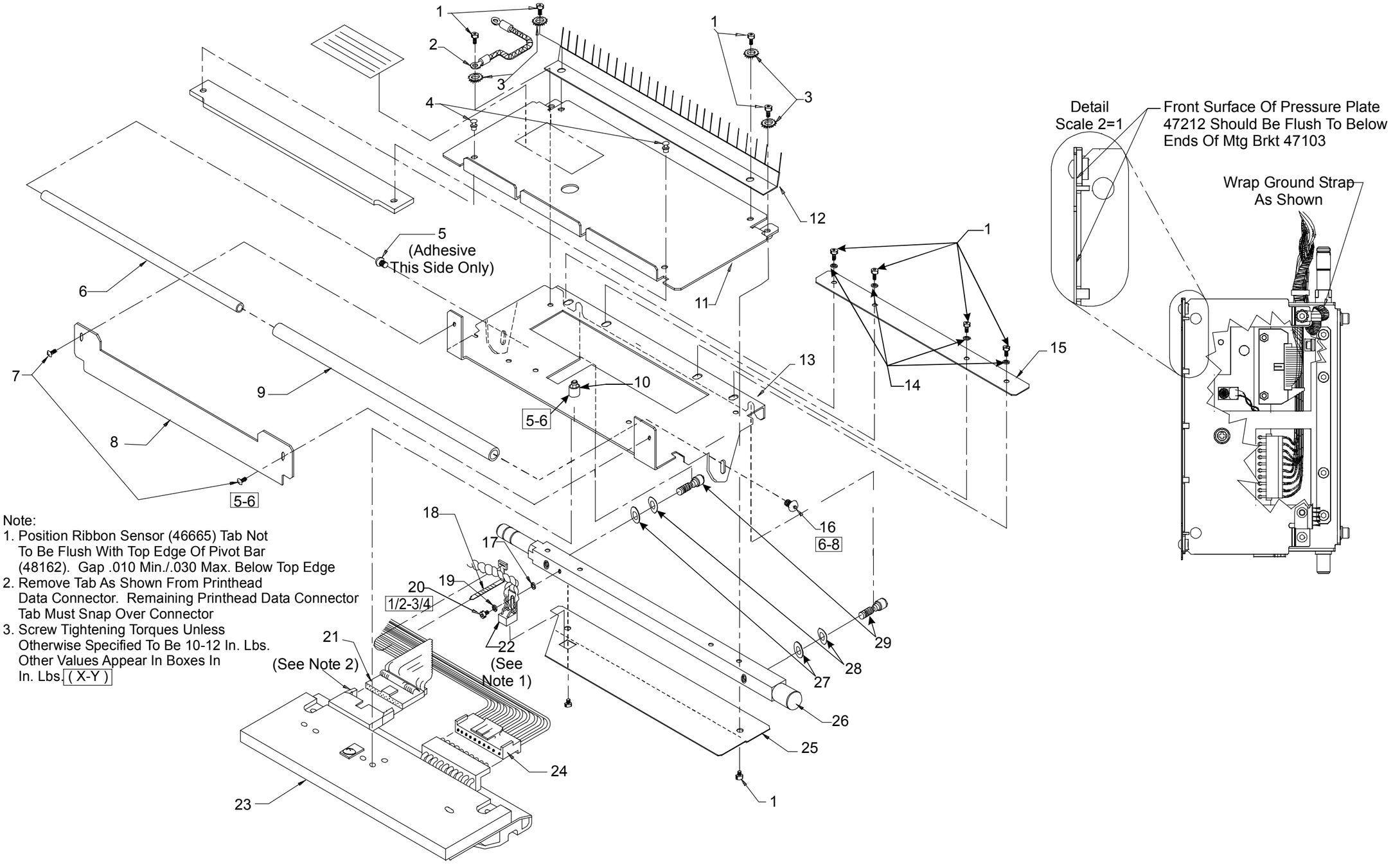

Detail
Scale 2=1
Front Surface Of Pressure Plate 47212 Should Be Flush To Below Ends Of Mtg Brkt 47103
Wrap Ground Strap As Shown
Note:
1. Position Ribbon Sensor (46665) Tab Not To Be Flush With Top Edge Of Pivot Bar (48162). Gap .010 Min./.030 Max. Below Top Edge
2. Remove Tab As Shown From Printhead Data Connector. Remaining Printhead Data Connector Tab Must Snap Over Connector
3. Screw Tightening Torques Unless Otherwise Specified To Be 10-12 In. Lbs. Other Values Appear In Boxes In In. Lbs. (X-Y)
(See Note 2)
(See Note 1)
1/2-3/4
5-6
6-8

Figure 5-10 96*Xi*III Print Head Support Assembly

Printer Model 140*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	*30392-004	Screw, 6-32 x .25	10
2	30781	Cable, Ground Printhead	1
3	*01159	Washer, Flat .250 x .125 x .028	4
4	48182	Rivet Snap .138 x .08 Plastic	2
5	30314R	Adhesive	1
6	30007-4	Shaft, Roller	1
7	46882-003	Screw, 4-40 x .19	2
8	48017	Plate, Ribbon Strip	1
9	48099-5	Roller	1
10	22016	Screw, Printhead Mounting	1
11	48212	Plate, Pressure	1
12	31899	Brush, Static	1
13	48003	Bracket, Head Mounting	1
14	*06268	Washer, #6 Lock	4
15	40013	Plate, Washer	1
16	*30402-006	Screw, 6-32 x .37	1
17	30494	Washer, .320 x .119 x .062	1
18	Q06020	Tie-wrap .09 W x 3.63 L	1
19	*01153	Washer, Flat .250 x .125 x .028	1
20	*30391-003	Screw, 4-40 x .19	1
21	46682	Cable, Printhead Data	1
22	46665M	Kit, Maintenance Sensor Ribbon	1
23	48000M	Kit, Maintenance Printhead	1
24	49640-021	Cable, Printhead Power	1
25	48014	Plate, Guard	1
26	48162	Bar, Head Pivot	1
27	*40193	Washer, Flat .406 x .172 x .048	2
28	*40194	Washer, Curved .312 x .144 x .016	2
29	*46481-1	Screw, Adjustment 6-32	2

Table 5-11 140*Xi*III Printhead Support Bracket

*Also Available in Hardware Kit 48205M

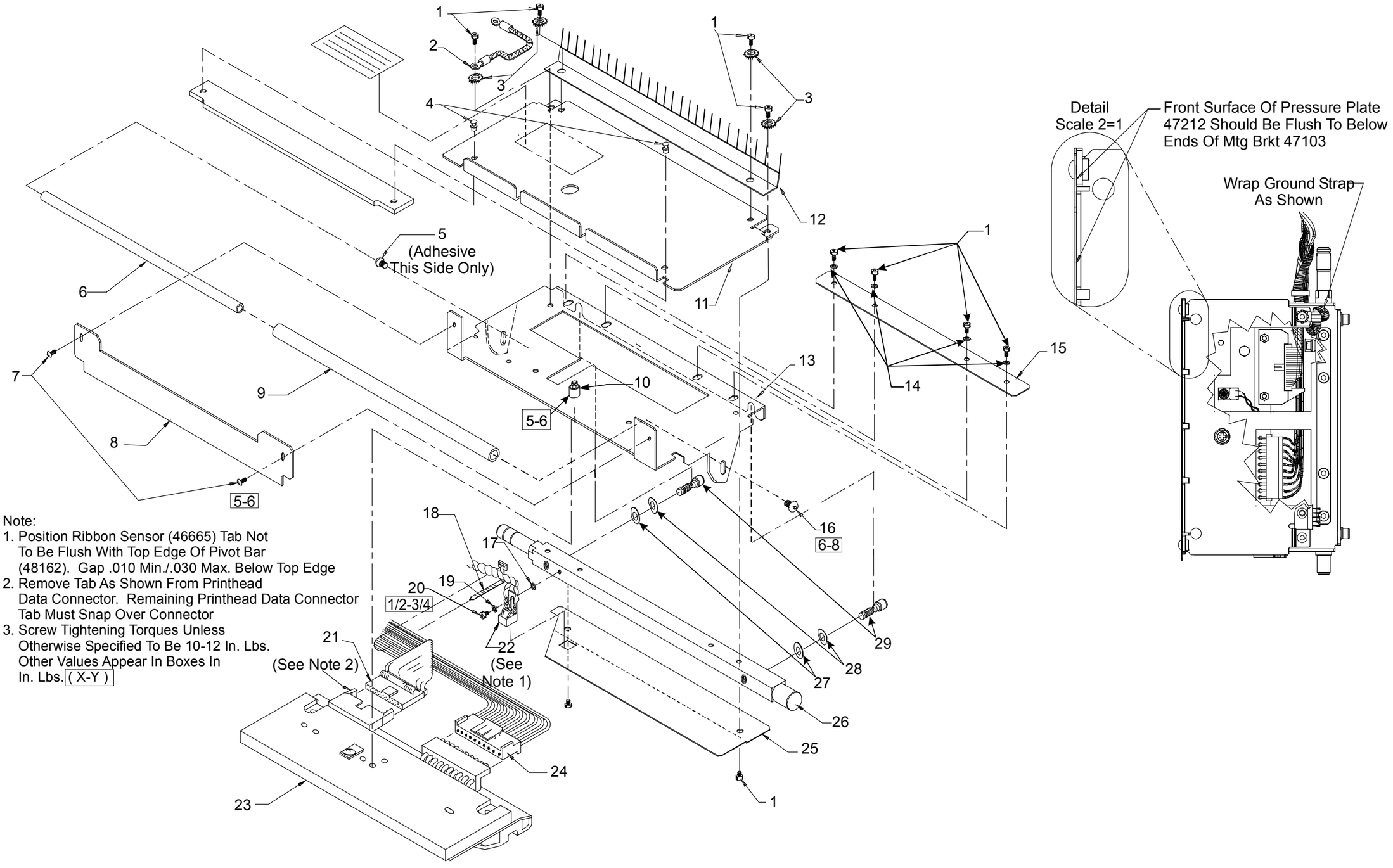

Detail
Scale 2=1
Front Surface Of Pressure Plate 47212 Should Be Flush To Below Ends Of Mtg Brkt 47103
Wrap Ground Strap As Shown
5 (Adhesive This Side Only)
5-6
6-8
1/2-3/4
(See Note 2)
22 (See Note 1)
Note:
1. Position Ribbon Sensor (46665) Tab Not To Be Flush With Top Edge Of Pivot Bar (48162). Gap .010 Min./.030 Max. Below Top Edge
2. Remove Tab As Shown From Printhead Data Connector. Remaining Printhead Data Connector Tab Must Snap Over Connector
3. Screw Tightening Torques Unless Otherwise Specified To Be 10-12 In. Lbs. Other Values Appear In Boxes In In. Lbs. (X-Y)

Figure 5-11 140*Xi*III Print Head Support Assembly

Printer Model 170*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	*30392-004	Screw, 6-32 x .25	10
2	30781	Cable, Ground Printhead	1
3	*01159	Washer, Flat .250 x .125 x .028	4
4	48182	Rivet Snap .138 x .08 Plastic	2
5	30314R	Adhesive	1
6	30007-7	Shaft, Roller	1
7	46882-003	Screw, 4-40 x .19	2
8	46017	Plate, Ribbon Strip	1
9	48099-8	Roller	1
10	22016	Screw, Printhead Mounting	
11	46170	Plate, Pressure	
12	46173	Brush, Static	
13	46169	Bracket, Head Mounting	1
14	*06268	Washer, #6 Lock	1
15	46013	Plate, Washer	1
16	*30402-006	Screw, 6-32 x .37	1
17	30494	Washer, .320 x .119 x .062	1
18	Q06020	Tie-wrap .09 W x 3.63 L	1
19	*01153	Washer, Flat .250 x .125 x .028	1
20	*30391-003	Screw, 4-40 x .19	1
21	46682	Cable, Printhead Data	1
22	46665M	Kit, Maintenance Sensor Ribbon	1
23	46500M	Kit, Maintenance Printhead	1
24	49640-023	Cable, Printhead Power	1
25	46174	Plate, Guard	1
26	46002-1	Bar, Head Pivot	1
27	*40193	Washer, Flat .406 x .172 x .048	1
28	*40194	Washer, Curved .312 x .144 x .016	1
29	*46481-1	Screw, Adjustment 6-32	1

Table 5-12 170*Xi*III Printhead Support Assembly

*Also Available in Hardware Kit 48205M

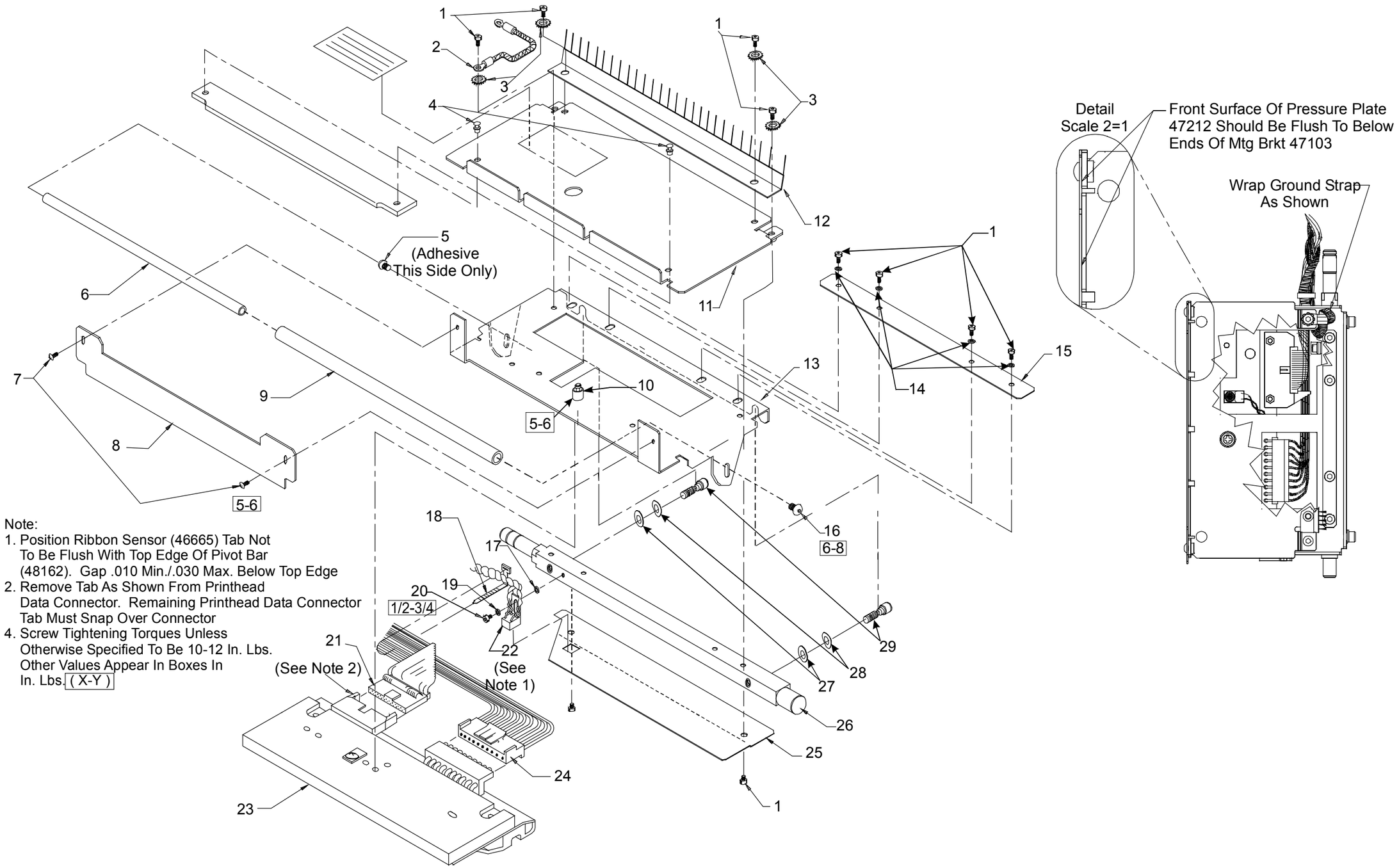

Detail
Scale 2=1
Front Surface Of Pressure Plate 47212 Should Be Flush To Below Ends Of Mtg Brkt 47103
Wrap Ground Strap As Shown
Note:
1. Position Ribbon Sensor (46665) Tab Not To Be Flush With Top Edge Of Pivot Bar (48162). Gap .010 Min./.030 Max. Below Top Edge
2. Remove Tab As Shown From Printhead Data Connector. Remaining Printhead Data Connector Tab Must Snap Over Connector
4. Screw Tightening Torques Unless Otherwise Specified To Be 10-12 In. Lbs. Other Values Appear In Boxes In In. Lbs. (X-Y)
(Adhesive This Side Only)
(See Note 2)
(See Note 1)
1/2-3/4
5-6
6-8

Figure 5-12 170*Xi*III Print Head Support Assembly

Printer Model 220*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	Ref	Pad, Pressure	1
2	*30392-004	Screw, 6-32 x .25	10
3	30781	Cable, Ground Printhead	1
4	*01159	Washer, Flat .250 x .125 x .028	4
5	48182	Rivet Snap .138 x .08 Plastic	2
6	30314R	Adhesive	1
7	30007-8	Shaft, Roller	1
8	46882-003	Screw, 4-40 x .19	2
9	22017	Plate, Ribbon Strip	1
10	30009-9	Roller	1
11	22016	Screw, Printhead Mounting	1
12	22180	Plate, Pressure	1
13	22191	Brush, Static	1
14	22003	Bracket, Head Mounting	1
15	*06268	Washer, #6 Lock	7
16	22013	Plate, Washer	1
17	*30402-006	Screw, 6-32 x .37	1
18	30494	Washer, .320 x .119 x .062	1
19	Q06020	Tie-wrap .09 W x 3.63 L	1
20	*01153	Washer, Flat .250 x .125 x .028	1
21	*30391-003	Screw, 4-40 x .19	1
22	22640-020	Cable, Printhead Data	1
23	22602	Cable, Printhead Data	1
24	46665M	Kit, Maintenance Sensor Ribbon	
25	22640-025	Cable, Printhead Power	1
26	22000M	Kit, Maintenance Printhead	1
27	22174	Plate, Guard	1
28	22002	Bar, Head Pivot	1
29	*40193	Washer, Flat .406 x .172 x .048	2
30	*40194	Washer, Curved .312 x .144 x .016	2
31	*46481-1	Screw, Adjustment 6-32	2

Table 5-13 220*Xi*III Printhead Support Assembly

*Also Available in Hardware Kit 48205M

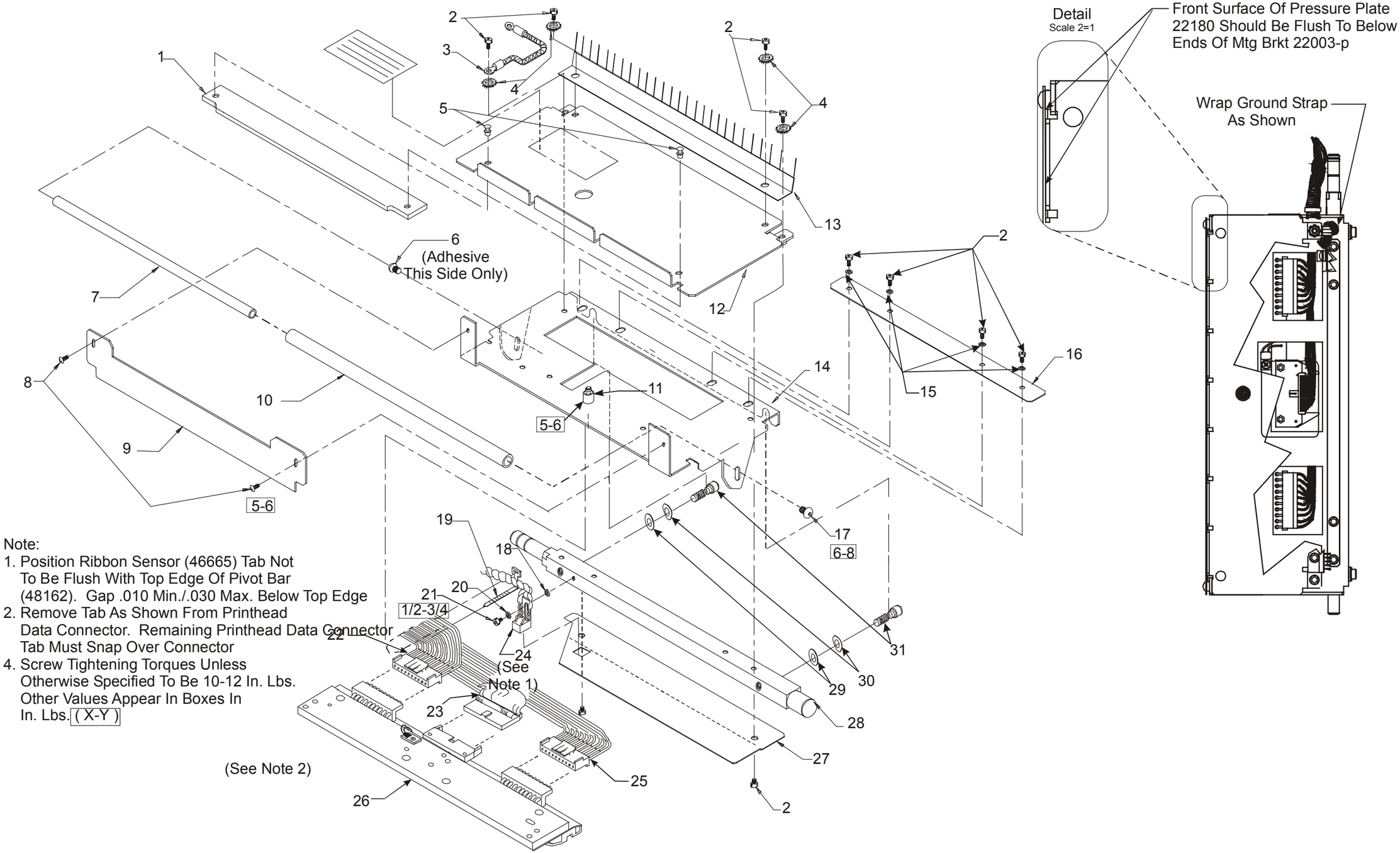
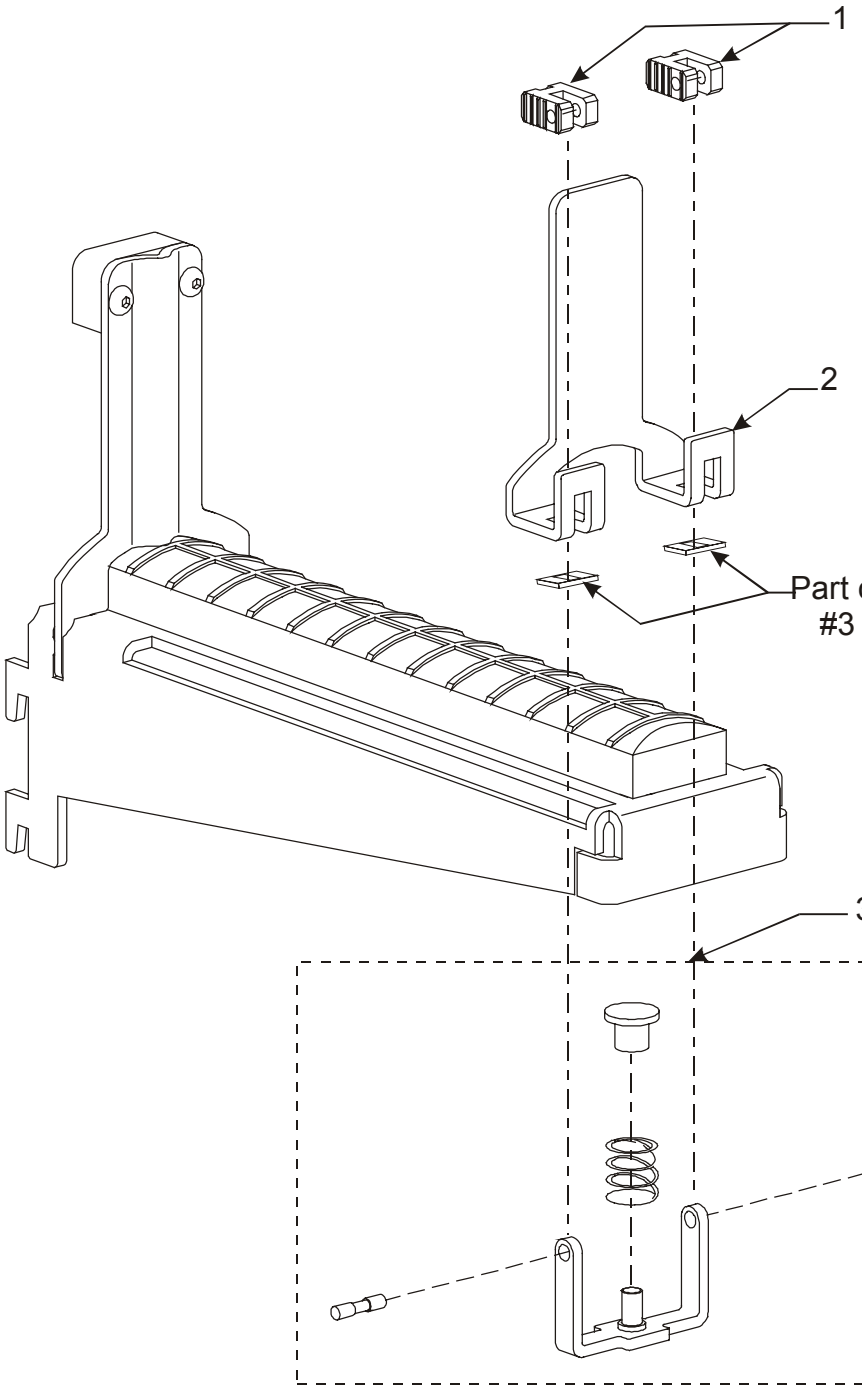

Detail
Scale 2=1
Front Surface Of Pressure Plate 22180 Should Be Flush To Below Ends Of Mtg Brkt 22003-p
Wrap Ground Strap As Shown
6 (Adhesive This Side Only)
5-6
1/2-3/4
6-8
(See Note 1)
(See Note 2)
Note:
1. Position Ribbon Sensor (46665) Tab Not To Be Flush With Top Edge Of Pivot Bar (48162). Gap .010 Min./.030 Max. Below Top Edge
2. Remove Tab As Shown From Printhead Data Connector. Remaining Printhead Data Connector Tab Must Snap Over Connector
4. Screw Tightening Torques Unless Otherwise Specified To Be 10-12 In. Lbs. Other Values Appear In Boxes In In. Lbs. (X-Y)

Figure 5-13 220*Xi*III Print Head Support Assembly

Printer Model: All *Xi*III Series Printers			
Item	**Part Number**	**Description**	**Qty**
1	REF	Block, Bearing	2
2	REF	Guide, Outer Edge	1
3	22152M	Kit, Maintenance Link and Pad	1
4	47153M	Kit, Maintenance Media Hanger (90/96*Xi*III)	1
4	48153-4M	Kit, Maintenance Media Hanger (140 *Xi*III)	1
4	46153M	Kit, Maintenance Media Hanger (170 *Xi*III)	1
4	22153M	Kit, Maintenance Media Hanger (220 *Xi*III)	1

Table 5-14 Media Supply Hanger

*Also Available in Hardware Kit 48205M



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Complete Hanger Assemblies	
90/96*Xi*III	47153M
140*Xi*III	48153-4M
170*Xi*III	46153M
220*Xi*III	22153M

Figure 5-14 Media Supply Hanger

Printer Model: 90*Xi*III, 96*Xi*III, 140*Xi*III, 170*Xi*III *NOTE: Optional 40mm Media Supply Spindle not Available for 220XiIII.*			
Item	**Part Number**	**Description**	**Qty**
1	N/A	Screw, 6-32 x .125	6
2	REF	Blade, 3" Core Media Supply (90/96*Xi*III)	3
2	REF	Blade, 40mm Core Media Supply (90/96*Xi*III)	3
2	REF	Blade, 3" Core Media Supply (140*Xi*III)	3
2	REF	Blade, 40mm Core Media Supply (140*Xi*III)	3
2	REF	Blade, 3" Core Media Supply (170*Xi*III)	3
2	REF	Blade, 40mm Core Media Supply (170*Xi*III)	3
2	REF	Blade, 3" Core Media Supply (220*Xi*III)	3
3	46068	Spring, Compression	1
4	N/A	Nut, Locking 5/8 x 18	1
5	47253M	Kit Media Supply Spindle 3" Spindle Complete (90/96*Xi*III)	1
5	47044M	Kit, 40mm Spindle Complete (90/96*Xi*III)	1
5	48253M	Kit Media Supply Spindle 3" Spindle Complete (140*Xi*III)	1
5	48044M	Kit, 40mm Spindle Complete (140*Xi*III)	1
5	46253M	Kit Media Supply Spindle 3" Spindle Complete (170*Xi*III)	1
5	46044M	Kit, 40mm Spindle Complete (170*Xi*III)	1
5	22253M	Kit Media Supply Spindle 3" Spindle Complete (220*Xi*III)	1

Table 5-15 Optional Media Supply Spindle

*Also Available in Hardware Kit 48205M

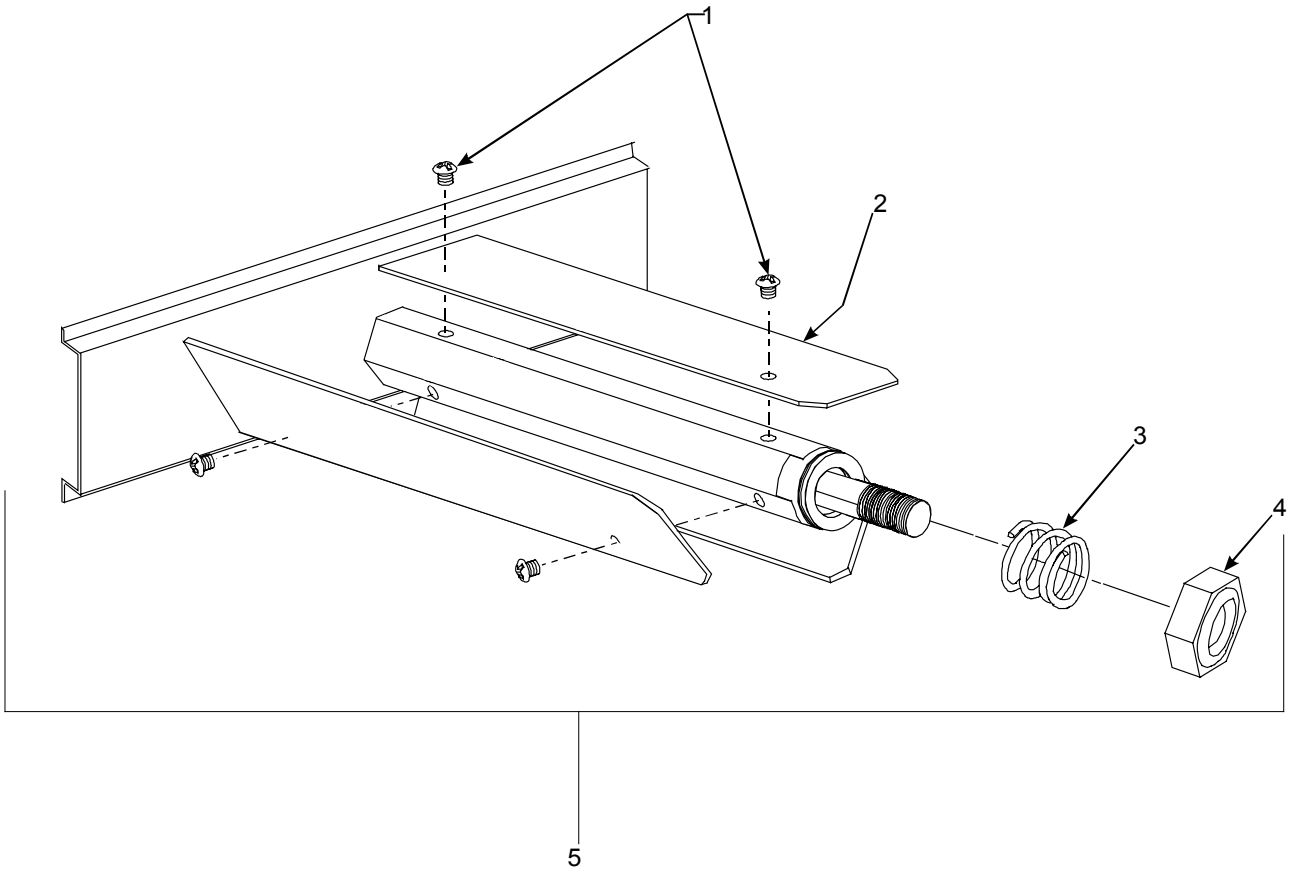


Figure 5-15 Optional Media Supply Spindle

Printer Model: 170*Xi*III and 220*Xi*III			
Item	**Part Number**	**Description**	**Qty**
1	01130	Nut, 6-32 Hex Washer Head (170*Xi*III)	3
2	30392-014	Screw, 6-32 x .87 (220*Xi*III)	3
3	*30392-004	Screw, 6-32 x .25	2
4	46127	Washer, .312 x .153 x .030	2
5	22213-7M	Kit, Maintenance Compliant Roller Assembly (220*Xi*III)	1
5	46813-7M	Kit, Maintenance Compliant Roller Assembly (170*Xi*III)	1

Table 5-16 Compliant Roller Assembly

*Also Available in Hardware Kit 48205M

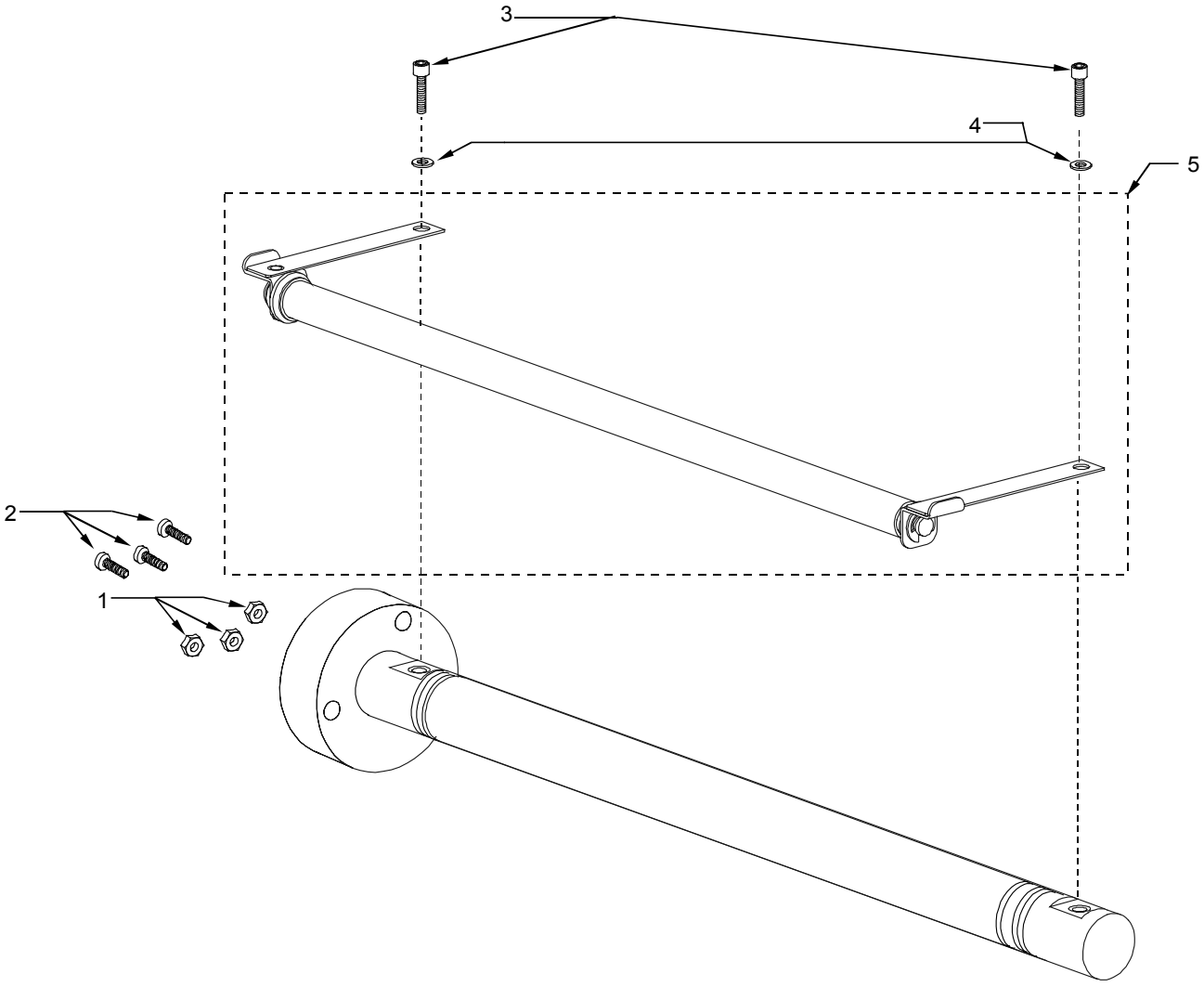
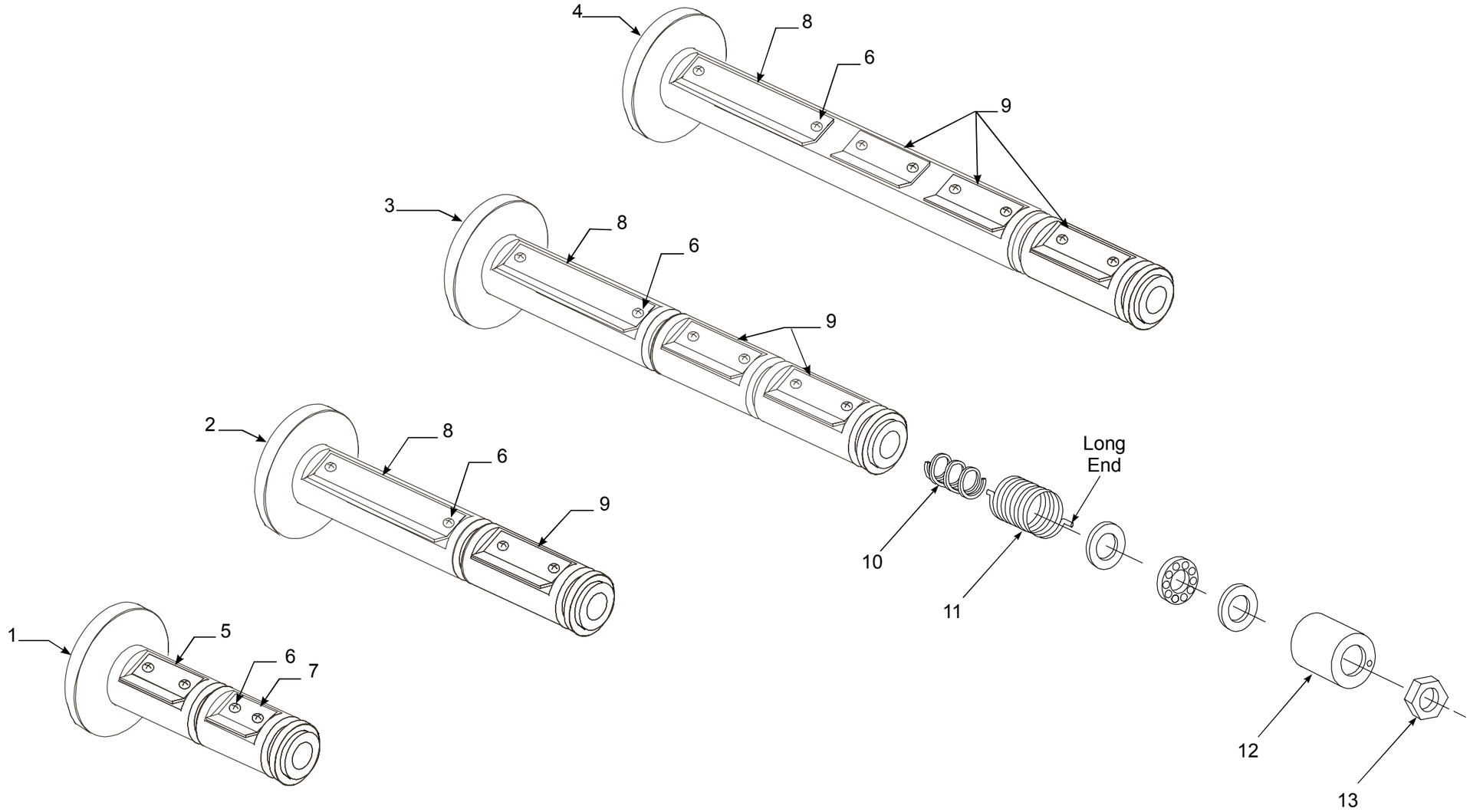


Figure 5-16 Compliant Roller Assembly

Printer Model: All *Xi*III Series Printers			
Item	**Part Number**	**Description**	**Qty**
1	47151M	Kit, Maintenance Spindle Ribbon Supply (90/96*Xi*III)	1
2	48151M	Kit, Maintenance Spindle Ribbon Supply (140*Xi*III)	1
3	46151M	Kit, Maintenance Spindle Ribbon Supply (170*Xi*III)	
4	22151M	Kit, Maintenance Spindle Ribbon Supply (220*Xi*III)	1
5	30070-2	Blade, Ribbon Supply, Inner	1
6	30401-002	Screw, 4-40 x .12	8 Max
7	30070-1	Blade, Ribbon Supply, Outer	1
8	40070-2	Blade, Ribbon Supply, Inner	1
9	40070-1	Blade, Ribbon Supply, Outer	3 Max
10	46211	Spring, Compression. .53 x .660 x .62	1
11	38042	Spring, Torsion, .739 x .805	1
12	47171	Housing, Ribbon Spindle Spring	1
13	46397-375	Nut, Locking Thin Hex	1

Table 5-17 Ribbon Supply Spindle Assembly

*Also Available in Hardware Kit 48205M



Notes:

1. All Components Must Be Oil Free.
2. O-rings, Wear Plates And Friction Clutches Must Be Handled With Care To Prevent Oil Or Grease Contamination.

Figure 5-17 Ribbon Supply Spindle Assembly

Printer Model: All *Xi*III Series Printers			
Item	**Part Number**	**Description**	**Qty**
1	47250	Kit, Upgrade Enhanced RTU (90/96*Xi*III)	1
1	48250	Kit, Upgrade Enhanced RTU (140*Xi*III)	1
1	46350	Kit, Upgrade Enhanced RTU (170*Xi*III)	1
1	22250	Kit, Upgrade Enhanced RTU (220*Xi*III)	1
2	47251M	Kit, Assy. Spindle/Clutch (90/96*Xi*III)	1
2	48251M	Kit, Assy. Spindle/Clutch (140*Xi*III)	1
2	46351M	Kit, Assy. Spindle/Clutch (170*Xi*III)	1
2	22251M	Kit, Assy. Spindle/Clutch (220*Xi*III)	1
3	47276	Spring, Compression	1
4	47251-2M	Kit, Maintenance End Cap/Release Bar (90/96*Xi*III)	1
4	48251-2M	Kit, Maintenance End Cap/Release Bar (140*Xi*III)	1
4	46351-2M	Kit,Maintenance End Cap/Release Bar (170*Xi*III)	1
4	22251-2M	Kit, Maintenance End Cap/Release Bar (220*Xi*III)	1

Table 5-18 Ribbon Take-Up Spindle Assembly

*Also Available in Hardware Kit 48205M

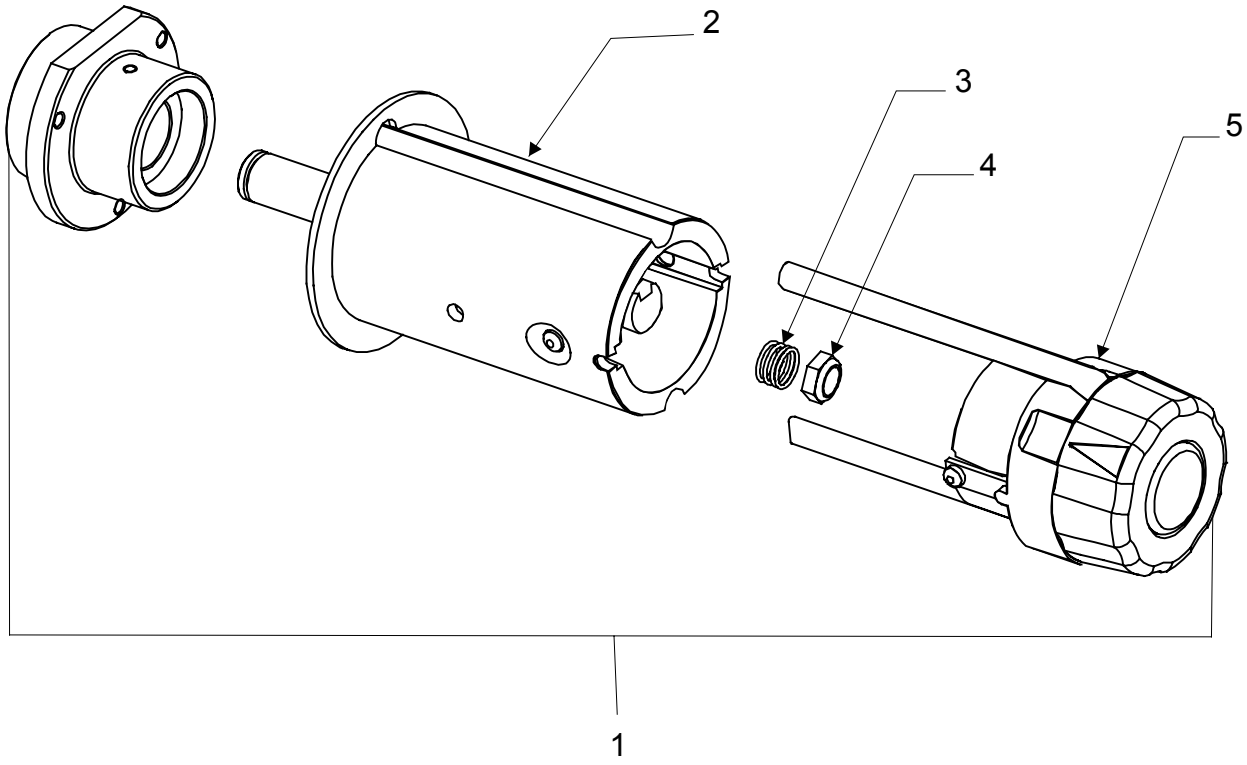


Figure 5-18 Ribbon Take-Up Spindle Assembly

Printer Model: All *Xi*III Series Printers			
Item	**Part Number**	**Description**	**Qty**
1	47383M	Assy., Maintenance Plate, Rewind (90/96*Xi*III)	1
1	48383M	Assy., Maintenance Plate, Rewind (140*Xi*III)	1
1	46383M	Assy., Maintenance Plate, Rewind (170*Xi*III)	1
1	22383M	Kit, Maintenance Plate, Rewind (220*Xi*III)	1
2	30914M	Assembly, Peel-Off Pulley (90*Xi*III, 140*Xi*III,170*Xi*III, 220*Xi*III)	1
2	47915M	Kit, Maintenance Peel-Off Pulley (96*Xi*III)	1
3	30265	Pulley, Idler (90/96*Xi*III,140*Xi*III,170*Xi*III)	1
3	22265	Pulley, Idler (220*Xi*III)	1
4	30207	Shaft, Idler Pulley (90/96*Xi*III,140*Xi*III,170*Xi*III)	1
4	22207	Shaft, Idler Pulley (220*Xi*III)	1
5	45189-5	Belt, Drive Rewind .080P 235T (90*Xi*III, 140*Xi*III,170*Xi*III, 220*Xi*III)	1
5	45189-12	Belt, Drive Rewind .080P 245T (96*Xi*III)	1
6	*30118	E-Ring, External .500 x .042	1
7	31336M	Kit, Maintenance MTU/RTU Pulley (90*Xi*III, 140*Xi*III,170*Xi*III, 220*Xi*III)	1
7	47358M	Kit, Maintenance Pulley MTU (96*Xi*III)	1
8	*30114	Washer, Flat .76 x .51 x .03	1
9	*30115	Washer, Wave .740 x .520 x .080	1
10	*30393-006	Screw, 8-32 x .31	3
11	*07435	Screw 6-32 x .37	2
12	*40193	Washer, Flat .406 x .172 x .048	1
13	46609-4M	Kit, Maintenance Take-Label Sensor (Includes Lower Sensor)	1
14	47155M	Kit, Maintenance Spindle Media Rewind (90/96*Xi*III)	1
14	48155M	Kit, Maintenance Spindle Media Rewind (140*Xi*III)	1
14	46249M	Kit, Maintenance Spindle Media Rewind (170*Xi*III)	1
14	22155M	Kit, Maintenance Spindle Media Rewind (220*Xi*III)	1
15	*40193	Washer, Flat .406 x .172 x .048	3
16	*30392-004	Screw, 6-32 x .25	2
17	02252	Ring, Crescent .25	2
18	40019	Plate, Roller Adjustment	1
19	*30247	Washer, Flat .42 x .262 x .0740	1
20	30261	Washer, Flat .442 x .255 x .020	2
21	47601M	Kit, Maintenance Platen .78 x 3.588 (90/96*Xi*III)	1
21	40038M	Kit, Maintenance Platen .78 x 5.213 (140*Xi*III)	1
21	46278M	Kit, Maintenance Platen .78 x 6.73 (170*Xi*III)	1
21	22101M	Kit, Maintenance Platen .78 x 8.73 (220*Xi*III)	1
22	46609-4M	Kit, Maintenance Take-Label Sensor (Includes Upper Sensor)	1
23	30104	Bearing, Ball .50 x .25 x .125	2

Table 5-19 Media Rewind Assembly

*Also Available in Hardware Kit 48205M

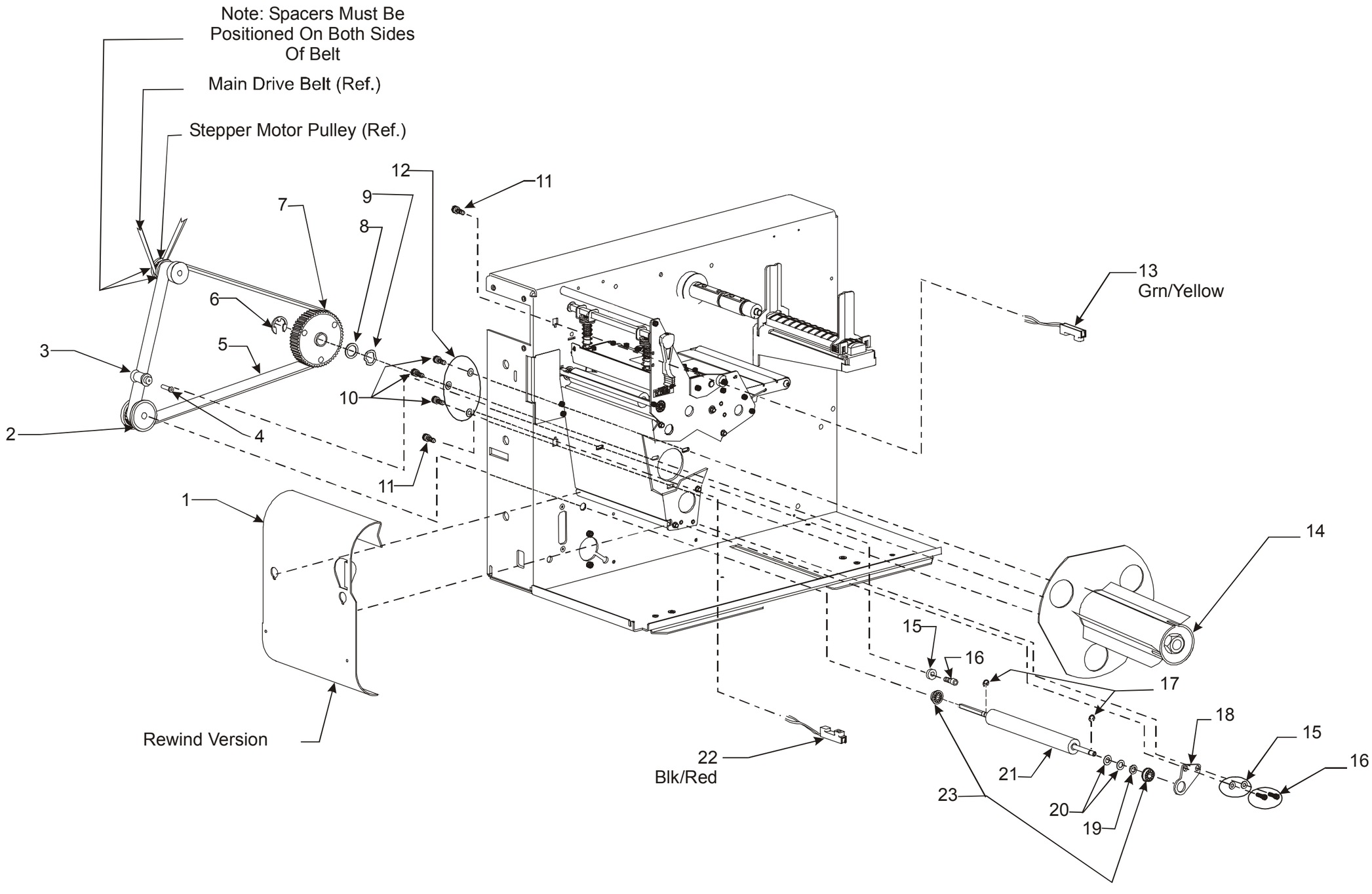


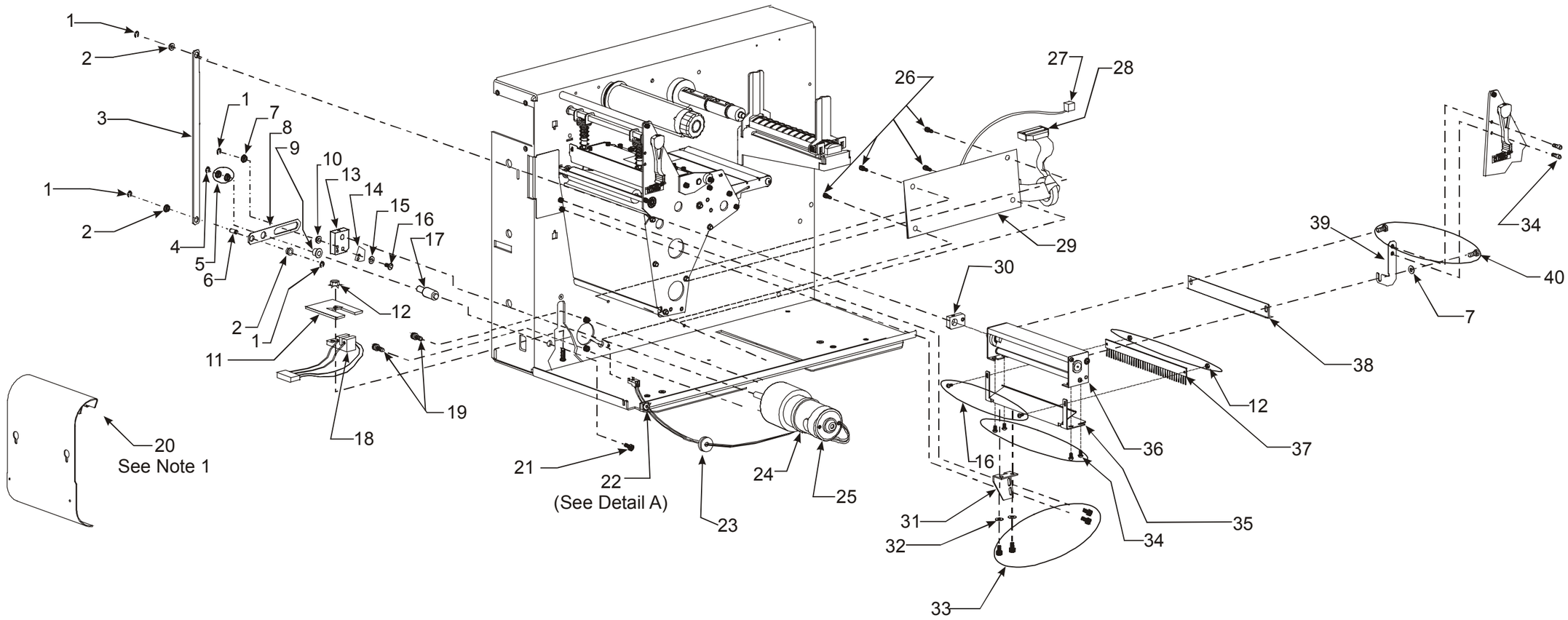
Figure 5-19 Media Rewind Assembly

Printer Model: All *Xi*III Series Printers			
Item	**Part Number**	**Description**	**Qty**
1	02133	E-Ring, .188 Black	4
2	30199	Bearing .375 x .189 x .125	3
3	30214	Link, Main	1
4	Q10019	E-Ring, .250 Black	1
5	30210	Washer, Flt .564 x .384 x .060	2
6	30217-1	Pin, Link .187 Dia.	1
7	30208	Washer, Flt .500 x .191 x .030	2
8	30215	Link, Slotted	1
9	30198	Bearing .500 x .252 x .250	1
10	30133	Bearing, Ball .375 x .187 x .125	1
11	30313	Clamp, Wire Cutter Opto	1
12	*01822	Nut, 4-40	5
13	30380M	Kit, Maintenance Lower Drive Arm	1
14	30219	Flag, Sensor	1
15	*01155	Washer, Lock #4	1
16	30236	Screw 4-40 x .25	3
17	30216	Post, Pivot	1
18	46618	Cutter Sensor	1
19	30394-005	Screw, 10-32 x .312	2
20	30382RM	Assy., Cutter/Rewind Plate Maintenance (90/96*Xi*III)	1
20	40382RM	Assy., Rewind Plate Maintenance (140*Xi*III)	1
20	46382M	Assy., Maintenance Cutter/Rewind Plate (170*Xi*III)	1
20	22382M	Assy., Maintenance Cutter/Rewind Plate (220*Xi*III)	1
21	30405-006	Screw, ¼-20 x .38 (90/96*Xi*III, 140*Xi*III, 170*Xi*III)	1
21	30405-008	Screw, ¼-20 x .50 (220*Xi*III)	1
22	*44632	Ferrite Ring 1.1 x .75	1
23	46224	Grommet, Rubber	1
24	08449	Tiewrap .187 W x 11.5 L	1
25	30374M	Assembly, Cutter Motor Maintenance	1

Printer Model: All *Xi*III Series Printers			
Item	**Part Number**	**Description**	**Qty**
26	*30391-003	Screw, 4-40 x .19	4
27	49604-010	Cable, Power Distribution	1
28	49600-012	Cable, SP Comm	1
29	49730M	Kit, Maintenance PCB Cutter Control	1
30	46280M	Kit, Maintenance Arm Drive Upper	1
31	30816	Bracket, Cutter Lower	1
32	*40193	Washer, Flt .406 x .172 x .048	2
33	*30392-004	Screw 6-32 x .25	4
34	10421	Screw M4 x .7 x 5	4
35	30819	Bracket, Cutter Support (90/96*Xi*III)	1
35	40819	Bracket, Cutter Support (140*Xi*III)	1
35	46819	Bracket, Cutter Support (170*Xi*III)	1
35	22819	Bracket, Cutter Support (220*Xi*III)	1
36	30196-100	Module, Cutter (90/96*Xi*III)	1
36	30196-150	Module, Cutter (140*Xi*III)	1
36	30196-200	Module, Cutter (170*Xi*III)	1
36	30196-251	Module, Cutter (220*Xi*III)	1
37	30320	Brush, 4.50 x .50 Carbon (90/96*Xi*III)	1
37	40320	Brush, 6.50 x .50 Carbon (140*Xi*III)	1
37	46320	Brush, 8.50 x .50 Carbon (170*Xi*III)	1
37	22320	Brush, 10.47 x .50 Carbon (220*Xi*III)	1
38	30181	Guide, Upper Cutter (90/96*Xi*III)	1
38	40181	Guide, Upper Cutter (140*Xi*III)	1
38	46181	Guide, Upper Cutter (170*Xi*III)	1
38	22193	Guide, Upper Cutter (220*Xi*III)	1
39	46807	Bracket, Upper Cutter	1
40	Q10011	Screw, M4 x .7	2

*Also Available in Hardware Kit 48205M

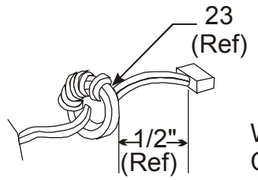
Table 5-20 Cutter Assembly



Note

1. If Rewind Option Is Installed On Cutter Machine, Be Sure To Order Cutter/rewind Plate (order By Model's Part No.)

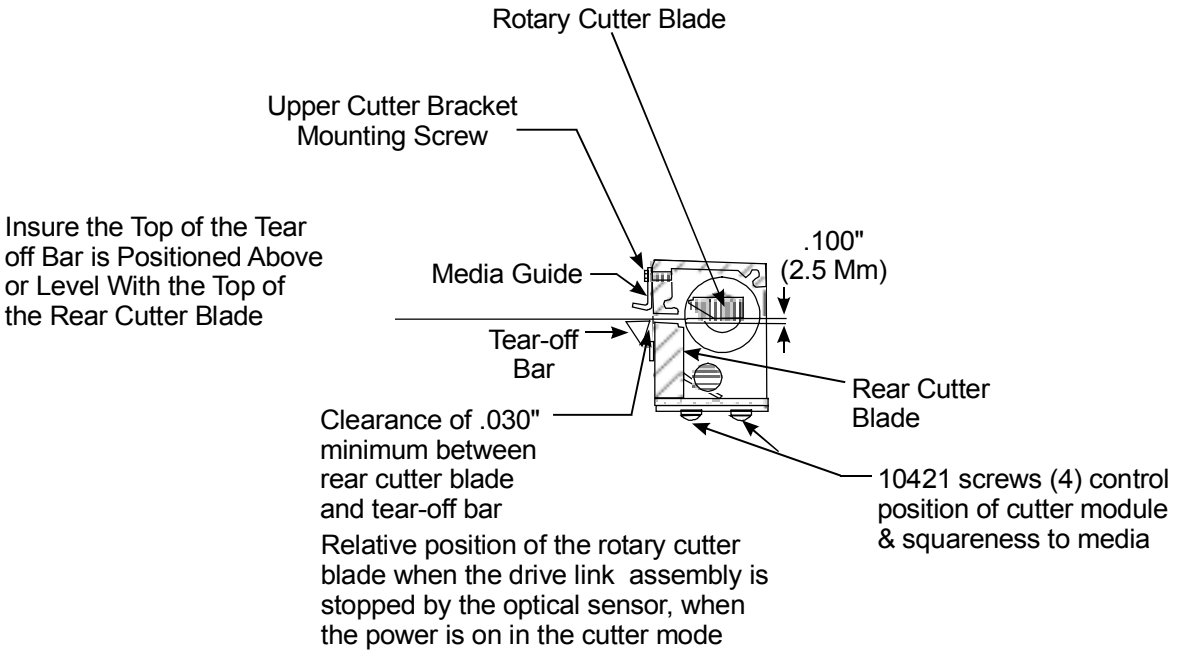
2. Position Brush So That Approximately 1/8" Of The Brush's Bristles Rub Against Each Moving Label And The Brush's Bristles Are Parallel To The Label Edge.



Detail A

Wrap Wires Thru Toroid Center 5 Times (will Wrap 4 Times Around Outside)

Figure 5-20 Cutter Assembly View 1


Rotary Cutter Blade
Upper Cutter Bracket Mounting Screw
Insure the Top of the Tear off Bar is Positioned Above or Level With the Top of the Rear Cutter Blade
Media Guide
.100" (2.5 Mm)
Tear-off Bar
Rear Cutter Blade
Clearance of .030" minimum between rear cutter blade and tear-off bar
10421 screws (4) control position of cutter module & squareness to media
Relative position of the rotary cutter blade when the drive link assembly is stopped by the optical sensor, when the power is on in the cutter mode

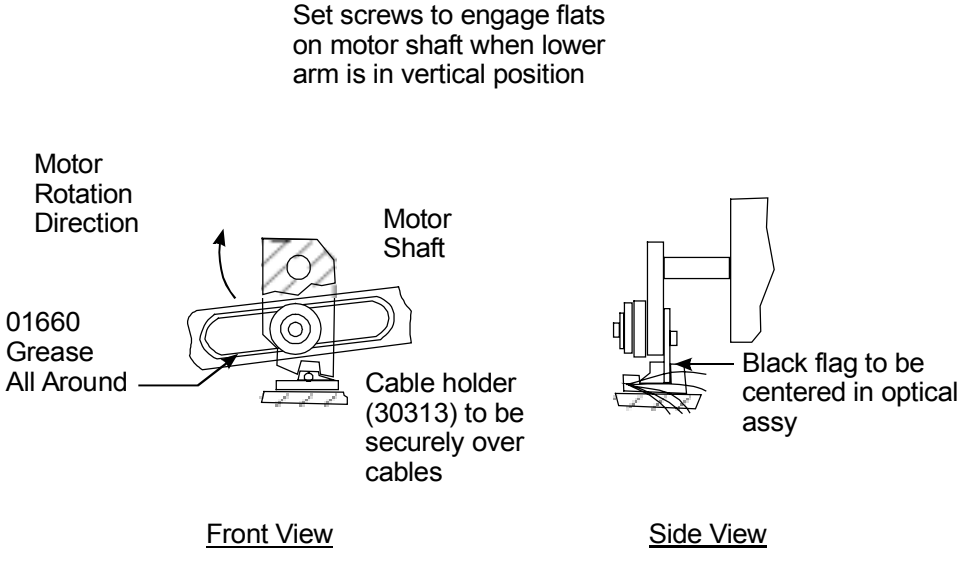

Set screws to engage flats on motor shaft when lower arm is in vertical position
Motor Rotation Direction
Motor Shaft
01660 Grease All Around
Cable holder (30313) to be securely over cables
Black flag to be centered in optical assy
Front View
Side View

Figure 5-21 Cutter Option Assembly View 2

SECTION 6 MISCELANEOUS INFORMATION AND APPENDICES

Insert Installation Instructions the rear of this section.

ASCII CODE CHART

American Standard Code for Information Interchange

HEX	CHAR	HEX	CHAR	HEX	CHAR	HEX	CHAR
00	NUL	20	space	40	@	60	‘
01	SOH	21	!	41	A	61	a
02	STX	22	“	42	B	62	b
03	ETX	23	#	43	C	63	c
04	EOT	24	$	44	D	64	d
05	ENQ	25	%	45	E	65	e
06	ACK	26	&	46	F	66	f
07	BEL	27	‘	47	G	67	g
08	BS	28	(	48	H	68	h
09	HT	29	)	49	I	69	i
0A	LF	2A	*	4A	J	6A	j
0B	VT	2B	+	4B	K	6B	k
0C	FF	2C	,	4C	L	6C	l
0D	CR	2D	-	4D	M	6D	m
0E	SO	2E	.	4E	N	6E	n
0F	SI	2F	/	4F	O	6F	o
10	DLE	30	0	50	P	70	p
11	DC1	31	1	51	Q	71	q
12	DC2	32	2	52	R	72	r
13	DC3	33	3	53	S	73	s
14	DC4	34	4	54	T	74	t
15	NAK	35	5	55	U	75	u
16	SYN	36	6	56	V	76	v
17	ETB	37	7	57	W	77	w
18	CAN	38	8	58	X	78	x
19	EM	39	9	59	Y	79	y
1A	SUB	3A	:	5A	Z	7A	z
1B	ESC	3B	;	5B	[	7B	{
1C	FS	3C	<	5C	\	7C	|
1D	GS	3D	=	5D	]	7D	}
1E	RS	3E	>	5E	^	7E	~
1F	US	3F	?	5F	_	7F	DEL

NOTE: Shaded codes <u>NOT</u> recommended for use as a Command Prefix, Format Prefix or Delimeter Character

SETTING BURN TEMPERATURE FOR IN SPEC BAR CODES

Not all direct thermal and thermal transfer materials have the same burn temperature requirements. The best way to check for the proper burn temperature is to use a bar code verifier that actually measures bars/spaces and will calculate the PCS ratio. Without the assistance of a verifier, your eyes and/or the scanner to be used in the system, are the best bet for picking the optimum burn setting. What follows is a simple yet effective method for adjusting the burn temperature to print IN SPEC bar codes.

1. Load media (and ribbon if required) according to the appropriate media loading and ribbon loading instructions found in the printer's User Guide. Insure the print method is appropriately characterized for either direct thermal or thermal transfer.
2. To print a label for evaluation, use the following procedure:
   - With power OFF, depress and hold the FEED key.
   - Turn the printer power ON, then release the FEED key.
   - The printer will perform the Power-On Self Test (POST), calculate label length, and then begin printing test labels.
3. Print a label, then depress the PAUSE key. The label will contain two bar codes as well as other printer information. Normal bar codes are printed in a horizontal format as they feed out of the printer. Rotated bar codes are printed in a vertical format.
4. Compare the test label printed, to the bar codes in Figure 6-1. If the test label appears under burned or over burned, refer to section 4.1 and increase or decrease the BURN TEMP setting accordingly.
5. Resume printing by pressing the PAUSE key again. Print a few labels at the new setting and verify that proper IN SPEC Bar Codes are being printed. Repeat steps 3, 4 and 5 until satisfied.
6. To terminate the printing of the test labels, depress the PAUSE key, then depress the CANCEL key.

Printing Conditions

Over-burned – Over-burned labels are obvious. The normal bar code bars increase in size, and the openings in small alphanumeric characters may fill in with ink. It may be readable but not IN SPEC. Rotated bar code bars and spaces will run together.

Slightly Over-burned - Slightly over-burned labels are not as obvious. The normal bar code will be IN SPEC. Small character alphanumerics will be bold and could be slightly filled in. The rotated bar code spaces are small when compared to the IN SPEC Code, possibly making the code unreadable.

Slightly Under-burned - Slightly under-burned labels are, in some cases, preferred to slightly over-burned for IN SPEC bar codes. Both normal and rotated bar codes will be IN SPEC, but small alphanumeric characters may not be complete.

Under-burned – Under-burned labels are very obvious. Both normal and rotated bar codes have incomplete bars and spaces. Small alphanumeric characters are unreadable.

In Spec - The IN SPEC bar code can only be confirmed by a verifier, but it should exhibit some very visible characteristics. The normal bar code will have complete, even bars and clear, distinct spaces. The rotated bar code will also have complete bars and clear distinct spaces. Although it may not look as good as a slightly over-burned bar code, it will be IN SPEC. In both normal and rotated styles, small alphanumeric characters will look complete.

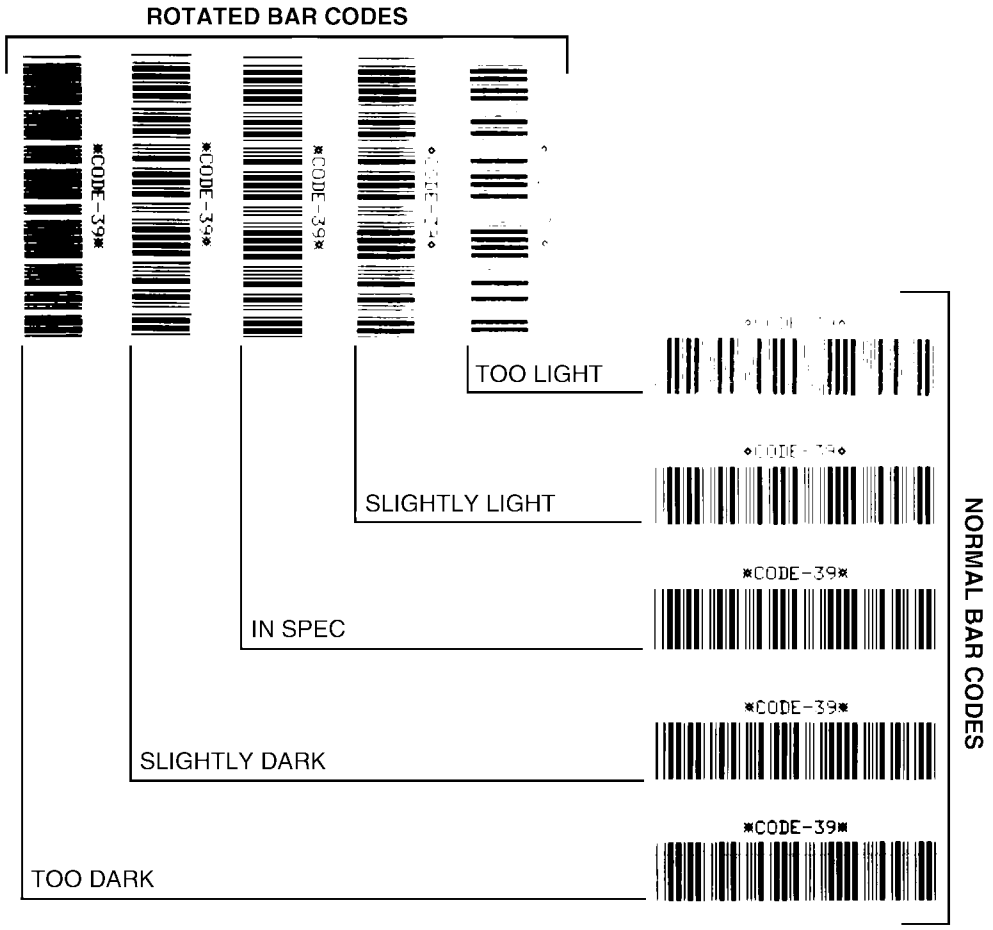


Figure 6-1 Bar Code Examples